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THE
QUARTERLY JOURNAL
OF
ECONOMICS

AUGUST, 1929

INVESTMENT AND SAVING: A GENETIC ANALYSIS

SUMMARY

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I. The Genetic Point of View

The doctrine that the correctness of an economic theory is, in part at least, a relative matter, that a given analysis may be applicable to one situation but not to another, has found little favor with some economists. They concede that in order to explain any concrete case it may be necessary to take account of certain factors which have prevented or impeded the full working-out of inherent tendencies, but they cannot see that this implies any reflection on a theory which professes only to describe what happens in the absence of such impediments. For similar reasons, while admitting that in framing an economic policy we must take account of any special conditions likely to be encountered, they deny that this reflects upon the usefulness, or even the necessity, of their general theory. It is not a ques-

tion, they insist, of revising the theory, but of applying it with an intelligent understanding of its nature and scope.

These doubts and objections, tho justified by much that has been urged under the genetic label, do not, it seems to me, completely dispose of the matter. A man's reaction to a given change in his economic environment does not depend simply upon some deposit of "human nature" in him, or even the individual traits of character which happen to be his heritage, but also upon the other circumstances in which he finds himself, circumstances partly individual and partly social, partly of his own making and partly the work of previous generations. In like manner, a society's reaction to a similar change, being the resultant of the varying and sometimes divergent reactions of its individual members, also depends upon factors which are not always and everywhere the same. A generalized statement of tendency may therefore be true of one society and not true of another. Furthermore, the outcome of our cooperative and competitive efforts to satisfy our economic wants is much affected by the social, political, and technical organization we have developed for these activities. To make adequate allowance for these variables we need a restatement of theory and not merely a grudging recognition of "qualifying factors." Not frictional but functional differences are involved. It is the purpose of the present paper to analyze the problem of interest from this point of view.

Opportunity for the gainful investment of savings is afforded nowadays by three principal uses,[1] or rather groups of uses, for each has several subdivisions. In

1. These are often referred to as "demands" for saving. The term is a little misleading, since it suggests that only loaned savings are involved in the interest problem.

the first place there is what we may call the *consumption* use: savings are employed to provide some form of consumers' goods, either for individuals who could not buy them with their own resources, or for societies which could not have them otherwise. Next is the use of savings to finance some phase of the complicated process whereby goods pass from the producer, in the narrower sense of the term, to the ultimate consumer. This we may call the *commercial* use. Finally there is the use of savings to provide the advances required for "roundabout" methods of production — hereafter referred to as the *production* use.[2] Each of these uses and its various subdivisions presents a threefold problem: what is the source of interest or, in other words, why a premium can be gained by the investment of savings; how the earning-power of savings is affected by variations in the volume of funds seeking investment; and finally whether there have been any significant changes, historically, in the importance and market-effectiveness of the different uses. To attempt to analyze investment as a whole, as is ordinarily done, throws the forces at work into a confusing blur and yields a theory which is neither realistically adequate nor logically satisfactory.

II. The Sources of Interest

1. *The Consumption Use.* There are three cases where savings are needed in order to provide consumers' goods; and since they do not give rise to interest in exactly the same way, it will be necessary to analyze them separately. The first will readily occur to most readers, for it has played a leading rôle in some theories

2. It should be noted that the different uses distinguished above do not run parallel to the ordinarily recognized types of investment. A given type of investment may provide for any of the three uses or a combination of them. The buyer of land, for example, may put the seller in a position to increase his current consumption, to build a house, or to buy farm machinery. See below, p. 592.

hitherto advanced. It is seen where a man borrows in order to obtain immediately consumable goods in excess of what he could buy with his own present income. This we may call the *current* consumption use. Here the source of interest is the difference between the utility — using that term loosely — afforded the borrower by the sum borrowed, and the utility to him of the goods obtainable in the future with the same amount of money. This difference may be due, as Böhm-Bawerk pointed out,[3] to more intense wants in the present as compared with the future, or to the expectation of having greater resources in the future. Some of this extra utility the borrower is willing to surrender to the lender in order to obtain the loan, but not all of it, for in that case he would be no better off as a result of his borrowing. Men do not make exchanges unless they expect to gain thereby. That the appreciation of future need which is involved in such calculations is often affected by underestimate of the future as such is a familiar point and I do not need to dwell on it here.

Borrowing of this sort, as everyone knows, is of great antiquity. In even the most primitive communities there are occasions for it. When the Mosaic law forbids usury among the Jews and when St. Luke counsels "Lend, hoping for nothing again," this is the kind of borrowing that is meant. No doubt there were other *uses* for savings in those early days, and perhaps the disapproval of the moralists unfairly ignored losses sustained by lenders in foregoing these profitable uses of their savings in some cases; but *loans* were seldom made for these other purposes. Hence, if there was any tendency in those days towards the emergence of a market rate of interest — which is doubtful — the current consumption demand was the dominant factor.

3. Positive Theory of Capital (Eng. trans.), Bk. V, ch. II.

The second type of consumption use has been as much neglected as the first mentioned has been stressed. In order to provide the satisfactions afforded by durable consumers' goods, a certain amount of waiting is necessary. For after the supply has reached a certain size, if not from the outset,[4] the cost of producing such goods exceeds the value of the *immediately* derivable satisfactions, and the balance of satisfactions is not forthcoming until later. The necessity of using the scarce factor, savings, keeps the supply of the good smaller, and its value higher, than would be the case otherwise. The source of interest here is therefore the difference between the total satisfaction afforded by the good during its life-time and its cost in terms of the utilities foregone in devoting labor to this particular purpose. In a money economy it is the difference between the wages paid the laborers who produce the good and the total selling price of the series of uses the good yields. This use of savings we may call the *durable* consumption use.

At this point we must consider an objection which has been much stressed by some economists. Why is the whole value of the series of uses not "imputed" to the labor that produced the durable good which yields them? Or in other words, why is there any surplus above the wages paid the laborers? No point in the whole interest controversy has been the source of so much confusion as this. It is easily cleared up, however, if we base our reasoning upon a sound understanding of the nature of cost. The production of the goods in question is analogous to the case of production with the coöperation of a scarce kind of labor, which I discussed in a previous article in this Journal.[5] Here the scarce factor is savings,

4. It is conceivable that the value of a single use might *exceed* the total cost when the supply was very small. Cost is used here in the sense of sacrificed alternative uses of the labor required.

5. August, 1928, pp. 549–551.

and production can be expanded only up to the limits of that factor. Only so much of the value of the supply thus made available need be given the laborers as will pay them the same wages they have received hitherto. They have no better alternative to turn to, since the demand for the durable good entails a corresponding shifting of demand away from other commodities. And why should the possessors of the scarce factor, savings, pay the coöperating laborers more than they need to?

This kind of investment is also of great antiquity. It was an obvious and effective way for an individual or family enjoying present prosperity or productive efficiency to make provision against a day of need or to lay the foundations of future economic greatness. In general, however, it did not play any considerable rôle in the *lending* of savings. The borrowing (or renting) of durable goods or the money to buy them developed slowly, and even in modern times was limited to a small range of things until the development of the instalment technique greatly increased its scope. Its growing availability to the saver himself, however, made it increasingly important as an alternative to actual lending, and thus gave it considerable weight, as an indirect factor, in the market.

Finally comes a third consumption use, also of great antiquity — the production of goods which, because of the very nature of the processes involved, can not be made available immediately after labor has been applied, or which cannot be supplied in a given quality without such waiting. Most kinds of natural produce require at least a season's interval between some of the labor and the consumption of the finished good; many are of much slower growth; and many are not ready for use until after a further period of processing, as in the case of wine and lumber. Many manufactured goods as well

are produced by processes which are necessarily time-consuming, not in the sense that the moving of raw materials and finished goods from one point to another takes time, which should perhaps be regarded as a commercial operation, but in the sense that the physical operations have to be prolonged. Fine shoes, for example, are left on the lasts for a week or more in order to insure better service to the wearer. The supply of such goods is kept smaller by this necessity of using the scarce factor savings, and there is a surplus of value over cost which the owners of the scarce factor can appropriate.

2. *The Commercial Use.* The attention which has been bestowed on the use we now have to consider has been strangely out of proportion to its importance. The great and increasingly complex processes required for the conveyance of goods to the ultimate consumer from the place where they received their "finishing touches" in a technical sense, and the equally important operations involved in bringing materials and semi-finished goods from one body of workers to another, are not only expensive, as we are all aware from daily and often undiscriminating complaint, but they take time. This means, of course, that somebody has to wait, that savings must be invested in these processes. Every treatise on marketing recognizes "financing" as one of the marketing functions, but interest theorists have passed it over in almost complete silence. Perhaps this has been due to a belief that marketing is only a phase or necessary adjunct of the roundabout method of production. It is true, as we shall see, that there are important similarities between this demand for savings and that derived from the "capitalistic" process; but they are not identical, and there are both theoretical and practical advantages in dealing with them separately.

To discover the source of interest in this case we must first distinguish between two kinds of marketing. First, there is the transporting of goods from the areas where they are produced to areas where they can not be produced. This exchange based on the "geographical division of labor," like all exchanges, involves the acquisition of what is more desired in return for what is less desired. If there were no barriers to its accomplishment, it would be extended to the point where the gain had reached the vanishing point. There is a barrier, however, which checks the extension somewhat short of this — the necessity of enlisting the services of savers. This, then, acts as a limiting factor and tends to maintain a discrepancy between the value of the goods given and that of the goods received in this exchange, i.e. between the cost [6] of the acquired goods (in terms of values foregone) and their value when finally disposed of. This surplus of value is the source of the interest earned on investments of this type.

The other kind of marketing is the handmaid of the division of labor, not of the inevitable (largely geographical) sort just mentioned, but of the kind adopted for the sake of efficiency. Like the first kind it not only requires labor — a vast army in the modern world — but also time; and this need, as before, constitutes the limiting factor in extensions of this desirable technique. The source of interest, however, is different. It is in the increased physical efficiency of labor applied in these ways over unspecialized workers. Out of what else can interest come? The laborers do not get any lower wages — the process could never be introduced if it entailed that; and the products they make do not cost the consumer any more than they did before the

6. Including, of course, the labor required for the physical processes of transfer.

better method was adopted. There remains, of course, the possibility that the laborers might manage to appropriate the results of their increased efficiency. This question I shall leave till the following section, where we shall see that the result depends upon circumstances.

Of these two commercial uses for savings the first was for centuries the more important. Long before the modern factory had made any great inroads on the simple intra-household division of labor and the local making-to-order craftsmen of the towns, rare products of many distant lands were being brought to Western Europe, by means as slow as they were expensive. This offered an ever increasing field for the investment of savings, not only by the saver himself, as in the case of durable consumers' goods, but also through intermediaries. The contractual loan (mutuum), it is true, was frowned upon by Church law, but the sleeping partnership afforded the saver a comparatively ready outlet in commercial channels. Thus investment of this kind was subject to something approximating market forces. The other kind of commercial borrowing did not attain great proportions until modern times. Today, however, when large-scale production and the localization of industry have separated the consumer from the producers of nearly every article he consumes, it probably makes larger demands than the first on the savings of many countries. Taken together the two commercial uses are a very important factor in the market for loanable funds.

3. *The Production Use.* The last of the three groups into which I have divided the uses for savings is familiar to all students of economics. In many discussions of interest, indeed, it has been given almost exclusive attention. Unfortunately, however, these analyses, elaborate as some of them have been, have dealt with the problem

in such unrealistic terms that they have not only failed to convince a considerable group of thinkers but have missed some of the most significant elements in the problem. To begin with, they have generally ignored the fact that the roundabout or savings-using process of production may be inaugurated for two very different reasons. The first, both in point of time and of present importance, is because these processes enable laborers to turn out a larger amount of goods in a given time — they increase the physical efficiency of the workers. The second is because these processes enable us to produce certain goods with less, or none, of the skilled scarce labor required to produce them by more direct methods. This is nowadays a very important reason for the introduction of machinery in many cases. Gains of both kinds may, of course, accrue from a given change to more roundabout or "capitalistic" methods, but it is necessary to analyze them separately since they do not work in the same way.

Let us begin with the less important form. If a certain good formerly produced in limited amounts by a scarce group of workers can be produced equally well by a more plentiful and therefore less expensive group, there will be a difference between its market value and the cost of the labor required to produce it, until the supply is increased beyond its former proportions. The market value remains the same, the supply being unchanged, while the labor cost has fallen. This excess of value over cost would lead to increased production, falling market value, and eventual elimination of the surplus of value, were there no obstacle to the adoption of the new method. But there is an obstacle — the necessity of using savings, the new process being a roundabout one. If this limitation prevents the equalizing of cost and value, the scarce factor, savings, will be

the gainer. In this case, however, the laborers who have to be enlisted for the new process may benefit somewhat, for this may involve a greater total demand for the labor of their group, with no new recruits to offset it.

But when the capitalistic process is one which increases the efficiency of labor, the source of interest will be, as in the second commercial use discussed above, the extra physical productivity of the workers. That is all it can come from.[7] If nobody in the community desires any more of the good produced by the new process in question, the labor "saved" can be utilized for the production of other things or to provide more leisure.[8] Until both these alternatives have lost their savor, there is no ground for doubting that the increase in physical productivity will also bring an increase in "value productivity."

Both of the production uses for savings attained their present proportions relatively late. Not only was the lending of savings for such purposes comparatively unimportant until pretty recent times but even investment in such uses by savers themselves developed very slowly before the Industrial Revolution. There were tools to be made, a certain amount of producers' machinery, and some permanent equipment for use in productive processes, but taken together these were less important than either the consumption use or the commercial use of savings. No theoretical analysis, therefore, can serve as an adequate basis for explaining interest rates or judging public policies and moral standards in earlier days which makes the production use the overwhelmingly predominant factor in the problem.

7. The possibility that the workers, not the savers, may be the sole beneficiaries arises here as in commercial borrowing of the second class. Cf. p. 575 above.

8. The only reference to this aspect of the problem which I recall is in an article by A. F. McGoun (Quarterly Journal of Economics, xxxi, 556), where the suggestion is credited to Professor Taussig.

III. The Yield Schedules for Savings

Our next problem is to analyze the effect upon the earning-power of savings of an increase in the amount of funds seeking investment, i.e. we have to explain the nature of the yield schedules derived from each of the sources of interest pointed out above. It will save time and bring out some interesting relations if we group these different uses according to a classification not employed in the foregoing discussion. Some of the uses of savings already analyzed, it will be remembered, served to increase the physical efficiency of labor, whereas the others did not increase the efficiency of labor but simply enabled it to flow into more-wanted channels. In each of these two categories an increase in the supply of savings produces its effects upon the rate of interest in ways which are essentially different from those observable in the other class, while within the group there is general similarity. It will therefore not be necessary to analyze each of the subdivisions in detail. In the following discussion I shall give only brief consideration to all except one of the most important forms in each of the two groups.

1. *The Scarcity-Reducing Investments.* The most important, though perhaps not the most interesting theoretically, of the uses included in this group is the providing of durable consumers' goods. The nature of the yield schedule derived from this use can be most readily understood if we begin with the situation where only enough savings are available to provide a very small supply of the good in question, perhaps only a single unit. The difference between the value of the uses afforded by this small stock and the cost of the labor which produced it will accrue to the owner of the necessary savings as interest, and the ratio between this sum

and the sum required to compensate the laborers will be the *rate* of interest earned. In terms of a demand schedule it is the rate which a borrower of this limited supply of savings can afford to pay if he has this particular use for them in mind.

Now if more savings become available, there are only two things the owners can do with them, disregarding for the moment all other uses of savings except the durable consumers' goods now under consideration. They can provide more of the same good for which the smaller supply of savings was used, let us say houses, or other durable goods, let us say automobiles. If they adopt the first course, the value of the uses afforded by houses will fall more or less, the supply being larger; and since the labor cost of building a house remains as high as before, the difference between the value of a house and its cost — the source of interest — will be less. Borrowers can not afford to take the larger supply of savings off the market at as high a rate as they could pay for the smaller supply. If savers turn to the production of automobiles, on the other hand, their earnings may be as high as in the other investment or may be less. (If they were higher, of course, the original small supply of savings, if large enough,[9] would have been employed for automobiles before *any* houses were built.) In the first case some additional savings can be invested without any decline of earnings, but in the second case this is impossible. The alternative to building more houses is also inferior to the opportunity afforded by the first house (or few houses). It all depends on the strength of the demand for automobiles and the cost of producing them. In any event the point will eventually be reached where an increased supply of savings cannot

9. This is an important point. No matter how profitable an investment may promise to be, it does not become a factor in the market until enough savings are available to finance it.

find employment except at lower rates of return. In other words, the yield curve for savings, so far as the durable consumption use is concerned, is negatively inclined, though it may not fall with every increment of supply.

This, then, is the general principle which applies to all the varieties of scarcity-reducing investments: the yield they afford declines with the expansion of investment, because the value of the goods they provide falls while the cost of producing these goods remains the same. The rate of decline depends on the elasticity of the demand for the goods produced with the use of savings. Wages, it is important to note, are not increased by such investment, though the wages of certain groups of laborers may be favorably affected by this shift in production.[1] Indeed there is nothing out of which an increase in wages could be paid, labor being no more productive than before.

The alternatives facing the saver in the above case have analogies in all the other kinds of investment and there are considerable advantages in distinguishing carefully between them. In the first, it will be noted, additional outlet for the gainful employment of savings is found in extending or duplicating a *given* productive activity; in the other it is a *different* use of savings (in the same general class) which is resorted to. The first, then, may be called *duplicative* investment, the second, *alternative*, investment. Each form, as I have said, is found in every class of investment.

The yields of the other scarcity-reducing investments behave in much the same way as the one just discussed. In the current consumption use of savings, for example, the margin between the utility afforded by the present

1. Where this is the case the yield on the investment is somewhat diminished. If it is wiped out altogether by such wage increases, that particular use of savings has no power in the market for savings.

goods obtained by borrowing and that of the goods which will have to be foregone later, in order to repay the loan, diminishes as the borrower obtains more and more of any given good (duplicative investment) and also as he obtains other less important goods to add to his present consumption (alternative investment). A lower rate of interest must therefore be accepted in order to induce borrowers to take larger supplies of savings off the market. It would be unwise, however, to push the purely rational part of this analysis very far. Probably few borrowers for current consumption make, or indeed are able to make, a dispassionate appraisal of the advantages and the costs of the bargains they make with lenders. In the grip of a great emergency, or perhaps an over-mastering desire, they grasp desperately at any opportunity of obtaining present resources and count almost no price too high. Nearly all of them are non-marginal buyers, i.e. there is no rate within the bounds of their experience which would cause them to withdraw from the market. They want a certain amount at any price below a more or less vague maximum. Governments borrowing in time of war are in this position; they are willing to pay whatever appears necessary in order to exclude a sufficient amount of rival borrowing from the market.[2] If such uses of savings were the only source of demand, a rational theory of interest would be only a distant approximation to reality. As it is, however, non-marginal users are absorbed in a broad market which offers ample scope for the marginal calculations of rational theory.

The application of the foregoing analysis to the remaining types of scarcity-reducing investment — commerce in goods which can be produced only in certain

2. Government borrowing for other purposes is likely to be in much the same position.

places, roundabout processes which diminish the need for certain scarce kinds of labor, production of goods which require an interval of time between the application of labor and the consumption of the product — presents no special difficulties. In the first — inter-regional trade — the value of the good in question falls in the importing region as funds become available to finance larger shipments of it (duplicative investment) and resort must be made to the importation of other goods (alternative investment) which either yield less gain at the outset or will do so eventually as more and more of them are imported. In the second — the saving of scarce labor — duplicative investment may not cause the earning-power of savings to diminish from the start. The margin between the cost and the value of the commodity produced by the new method will not diminish until the value falls or the cost rises. The fall in value will not ensue until a larger supply has to be marketed than was produced by the scarce grade of labor formerly employed; the rise in cost will not result until the wages of the laborers now employed are raised by the increased demand for their services. This depends upon what becomes of the displaced scarce laborers. If they are all absorbed in the group which is displacing them — which is unlikely — the increased demand for the latter will be offset by the additions to their number, and their wages will not rise until this counteracting factor has exhausted its effects, i.e. until duplicative investment expands production of the commodity beyond its former volume. As in the other cases, alternative investment — here the displacing of scarce labor in the production of other goods — serves to check the decline of earnings on investments of this type and causes the yield curve derived from this source to slope more gently downward.

2. *The Efficiency-Increasing Investments.* The uses of savings we now have to discuss, though analogous to the foregoing in some respects, involve some peculiar problems and bring very different social consequences. Of the two—roundabout production increasing the efficiency of labor, and commercial borrowing arising from the division of labor — the first has been the center of much controversy, not always of a very fruitful kind. I shall therefore deal principally with that, pointing out the application of the analysis to the second more briefly.

Let us begin by considering the process when applied on a minimum scale. Suppose a machine has been invented which increases the output of wheat per unit of labor employed, including the labor expended on the machine itself, and that just enough savings are available to provide one machine. Who will benefit from the increase in productivity thus effected — the men who make the machine, the men who operate it, or the saver who provides the necessary funds? And how shall we measure the gain?

As for the first point, there can be no doubt that in the long run neither group of workers will be great gainers. During the period of transition, it is true, the gain may be diffused, since some increase of wages may be needed in order to induce the laborers to take up the new work; but this is not inevitable, and would be temporary in any case. The saving which we have assumed involves the withdrawing of purchasing power from consumer markets, and the workers who formerly produced for those markets will suffer a decline in earnings unless some of them find employment elsewhere. It will not be necessary to offer higher wages to obtain men to *make* the machine. Other workers, however, may not be under such pressure. They do not face

diminished demand and lower wages in their old employments, except where industry is organized by entrepreneurs. (In the latter case an entrepreneur's offer of a different kind of employment, i.e. operating the machine, has the same effect on these laborers as the saver's change in spending had on the others.) It may be necessary, therefore, to offer a slight increase in wages in order to enlist the services of men to *operate* the machine, to overcome the inertia of the laborers. There is no relation between this increase and the amount of gain expected from the use of the machine. It will generally be much less; if it should happen to be even greater, the investment is impractical.

There is a second factor which may also reduce the amount obtainable by the saver. Some of the workers needed for the new process may have to be drawn from a scarce group of workers for whose services there has been no corresponding decrease in demand elsewhere as a result of saving. This means that there is now an increased demand for their services and that their wages will rise, thus reducing the amount of gain obtainable by the new process. Apart from these two exceptions, neither of which is an inevitable result of introducing the machine, the saver will be able to appropriate the whole increase in physical productivity. His *rate* of return will be the ratio between the number of days' labor he invested in the machine and the amount of time it saved in the production of wheat.

But suppose there are more savings available than are needed to finance the making of a single machine. Three possible ways of utilizing the additional funds present themselves: to provide more laborers with machines of the same kind (duplicative investment); to provide machines of some different kind (alternative investment); to provide the laborers already using the

machine with more machines of the same kind. The last, which is made much of in some expositions of productivity, should be carefully distinguished from true duplicative investment. It is really analogous to the second, involving a new organization of production, and the same analysis applies to it. Moreover it is far below the others in importance. I shall therefore not deal with it separately.

Now what will happen to the earning-power of savings if duplicative investment is resorted to? If this means employing still more of a scarce group of workers, it may lead to a further increase in their wages, but otherwise the return on investment will suffer no decline at first. If such investment continues to expand, however, the point will eventually be reached where, despite the most perfect mobility of labor, any further extension of the machine-using process will necessarily encounter obstacles. For although the transfer of workers into the *making* of machines presents no difficulty, saving having reduced the demand in consumer markets correspondingly, the recruiting of workers to *operate* the machines is a different matter. There has been no decline in the demand for their services, and if any of them should enter wheat-growing they would see those who remained in the old occupations earning higher wages than ever. In order to induce them to make the change it will therefore be necessary, not only to overcome their inertia, if that is operative, but also to raise their wages still further. In other words, the savers will have to surrender some part of the physical surplus, if they have been getting all of it, and a larger part otherwise.

How much this increase of wages will have to be depends upon how many laborers the savers have to attract away from other trades in order to provide opera-

tors for all the machines their savings make it possible to finance, and upon the elasticity of the demands for the various commodities involved.[3] The more they have to attract, i.e. the more funds for which they seek investment, the more they will have to concede. We thus arrive at the double proposition that, so far as this avenue of investment is concerned, an increase in savings *eventually* results in a general rise of wages and a fall in the rate of interest. The decline in interest does not begin at once — not until the production of wheat, apart from the savers' share, exceeds its former volume; but when once started it is continuous, unless checked by alternative investment.

Before considering the effects of alternative investment it will be well to translate the foregoing analysis into the terms of a money economy. There are two possible cases — first, where the currency expands in proportion to the increased productivity effected by the introduction of the roundabout process, and second, where the currency does not expand at all or not proportionately. Since the first of these is much the simpler, it will be well to begin with that. Under these conditions the increase in the money supply will prevent any general fall in prices and there will be no *permanent* changes in the relative prices of commodities until duplicative investment has reached the point where wages are forced upward. At the outset, however, there may be various complications. The additional money is paid the beneficiaries of the increase in productivity — savers, scarce laborers in receipt of higher wages, other laborers perhaps — and puts them in possession of just enough purchasing power to buy the surplus of wheat, if that happens to be what they want.

3. If the demand can be diverted from other products by advertising, the decline in earnings may be postponed. Witness the heavy advertising of machine-made cigarettes.

It is probable, however, that they may not want just that. There will therefore be "over-production" of wheat for a time, since it is impossible to effect the needed redistribution of productive capacity until after the recipients of these new incomes have expressed their preferences by the way they spend their money.[4] The value of wheat will therefore fall, bringing losses or reduced earnings to those in the industry, and stimulating a shift to the production of more-wanted things until earnings are equalized again — a process likely to be both slow and disagreeable. The extension of duplicative investment brings further complications of a similar kind, which will be obvious to the reader who has followed the argument thus far.

If the currency does not expand in proportion to the increase in physical productivity, the general level of prices will be lowered. At first the brunt of this change is likely to be borne by the industry where the efficiency-increasing processes are being introduced, since it is prone to overproduction anyway in this stage, as we have just seen. Other industries will also be affected, however, and money wages will eventually decline, though probably only after years of heart-breaking struggle. When this readjustment has been accomplished, the money-cost of making a given machine will be less, the money-value of its extra productivity will be lower in the same proportion, and the ratio between the two — the rate of interest — will be what it would have been, had these monetary complications not intervened.

Difficulties of the kind just considered seem to be almost inevitable concomitants of the extension of capitalistic production. The development of credit, it

4. In growing countries like ours the normal increase of demand tends to offset this temporary overproduction to a large extent.

is true, has greatly facilitated the expansion of purchasing power to accompany increases in production, but the technique of adjustment is still very inadequate. Scientific calculations, shrewd estinates, wild guesses, and not a little blind confidence in our lucky stars all enter into it today. It is too much to expect that it should function perfectly. Either too little currency expansion or too much — each with its attendant evils — is the probable result. Thus the adjustments necessitated by the expansion of capitalistic production engender, under present currency systems, some of the most serious and most puzzling of our economic problems.

Duplicative investment is the core of the interest problem, but it is not the only factor in the decline of the interest rate as the supply of investment funds increases. As we noted above, the saver has the alternative of using his money to finance some other roundabout process. The machine which increased the productivity of wheat-growers may be applicable to other branches of agriculture, or a different kind of machine may be introduced into some branch of industry. If any of these investments increases the physical productivity of labor as much as the first one, the point when duplicative investment brings lower interest and higher wages will be postponed. An additional volume of saving can be absorbed in providing this equally productive equipment for the laborers already employed in the industries in which it is applicable.[5] If the new processes do not increase physical productivity to the same extent as the others, they will not check the de-

5. An increase in population of working age also delays the decline of the interest rate, the new-comers having to be provided with the more productive forms of equipment. Restriction of immigration has not cut off investors in this country from this boon so much as might have been expected, since capital is being exported in greater volume.

cline in the interest rate immediately, but only after it has fallen to a point where these alternative investments offer equally favorable opportunities. Another stage of duplicative investment will then set in at this lower level, and interest will eventually fall again until a still less productive alternative checks it for a time. The yield curve for savings arising from the efficiency-increasing type of investment descends by a series of broad flat "steps" alternating with more or less gentle slopes. The resulting increase of wages is also by steps rather than continuous.[6]

It goes without saying that equilibrium between the numerous forces involved in this analysis is attained slowly and often as a result of costly errors. Only experience can reveal just how much is added to the physical output of labor by a given new process, and only experience, likewise, can furnish the necessary data on such questions as what savers will do with their new incomes (their interest), or how the relative value of products (and hence laborers' earnings) will be affected by the necessary transfers from occupation to occupation. Overproduction of certain commodities and underestimate of labor costs imperil the gains of the innovators, even in otherwise stable societies. Add to this the confusing cross-currents of crop failures, changes of taste, monetary maladjustment, and the like, and we may well wonder whether complete equilibrium can ever be expected. Nevertheless, every force and motive here assumed is steadily at work, and every needed fact can be and is eventually determined in farm, factory, and market-place.

6. The theory here developed, it is obvious, treats wages as residual: the laborers get the product of industry minus what the total competitive situation makes it possible for investors (and landowners) to retain for themselves. Of course, this does not cover the whole problem of wages, but it is an important element in any adequate analysis of the earnings of labor.

The foregoing analysis can be applied with little modification to those commercial investments upon which many applications of the division of labor depend. Production in that line where the gain in efficiency is greatest will expand as more of the funds required for marketing become available (duplicative investment), the surplus product going to the savers. Eventually, as in roundabout production, the process cannot be extended any further without reducing the production of other things, increasing wages all round,[7] and lowering the share of the product which the savers can retain. Introduction of the process in the production of some other commodity (alternative investment) may delay this decline but cannot permanently prevent it. Finally, the complications arising from the necessity of currency adjustments which we discussed in connection with the roundabout process are also encountered here, though they probably have never caused so much difficulty. There is an increased supply of goods flowing from industry, and the currency must expand proportionately or there will have to be a readjustment in the price-level.

IV. The Rate of Interest

The schedules showing the earning-power of various amounts of savings in the different types of investment analyzed above are analogous to the individual demand schedules of value theory, and like them are combined in a general or market schedule which determines the point at which the market will be "cleared" of a given supply, i.e. how low the rate of interest will be forced

7. It is worth noting that the two forms of investment discussed in this section are the only ones which tend to raise wages. Those who extol the advantages of instalment selling — rarely applied to investments of this type — might well ponder this point.

by the investment of a given amount of funds. All the elements in this general schedule are on the same footing; none "controls" or "governs" the resulting rate of interest in any special degree, unless it be by virtue of greater volume in some cases. Nor is it proper to speak of marginal uses or demands for savings. There may be several investments affording a given yield at the start, and every investment tends to be brought, by duplication, to the level of all the others. Very considerable additions to the supply of savings may, and nowadays generally can, find an outlet without any fall in the rate of interest.

This characteristic of the total schedule of investment yields has two interesting corollaries. In the first place, the sensitiveness of the market to additional supplies of savings diminishes as the volume of funds grows larger. The decline from one "step" in the curve to another becomes more gradual. When duplicative investment has been carried as far on any level as is possible without lowering the yield, the descent to the next level depends, not only on the further duplication of this level, but also on the extension of all previously inaugurated uses for savings. Further duplication in these, having been checked by the intervention of the use represented by the last level, is feasible as soon as the latter begins to show a decline. The savings markets of rich countries tend to be very stable. In the second place, the fall of earnings as duplicative investment proceeds becomes more and more irregular. The additions to the investment fund are unable, in the later stages, to finance expansion in all branches uniformly, the cost of efficient plants being large and many industries offering opportunities for such expansion. Borrowers who have not yet felt the depressing effect of increased production may be able to obtain funds for replacements at the

lower rates which are now the only alternative for lenders, thus obtaining for a time a kind of "borrower's surplus."

One portion of the general schedule of yields obtainable by the use of savings deserves special mention because of the exaggerated importance sometimes attributed to it — the sale of rent-bearers. The seller of such property is a seeker of present funds for some of the various uses analyzed above: the purchase of consumers' goods, the financing of marketing operations, production by roundabout methods. Whatever his purpose, he has a demand schedule, derived from it, of the premium he would be willing to pay for various amounts of savings. Its elasticity may be unity — in case he is determined to sell for what he can get; but it need not be so. He might want no more than a certain sum at any price, or he might be willing, if the price went low enough, to take more than his rentals would pay interest on, becoming a borrower of money as well as a seller of property. In any event his demand schedule becomes part of the total demand in the market to which he appeals for present funds, i.e. tries to sell his rent-bearer. If he does not want funds at more than five per cent and the market is "cleared" at six, he will make no sale — he is an excluded bidder; but if he will pay six per cent rather than go without altogether, he can find a buyer.

In practice, of course, such sales are complicated by the fact that the market may have to evaluate the rentals themselves as well as the bearer of them, and that the duration of the rentals may be a matter of opinion, but that does not affect the principle at all. The owner of a house, for example, has a net income to sell which depends on how far duplicative investment has been carried in the construction of houses of that

particular type. There may be much uncertainty as to how long it will continue at its present level, and even the latter may be hard to discover. If the owner accepts the market's opinion concerning these matters and is not an extra-marginal bidder for savings, he can arrange a sale, receiving the sum on which his rentals, after allowing for depletion, will pay interest at the market rate.[8] When the duplication of houses has not made much progress, because impeded in some way, the selling value of such property will be above the cost of reproducing it, i.e. above its long-run value.

To these general statements there are some minor but interesting exceptions. In the first place, there are certain factors, varying in force in different periods, which tend to prevent a complete equalization of yields from the use of savings. These are of two sorts — those which hinder investment through the intermediary of others, and those which lessen the accessibility of certain investments to some savers themselves. If the machinery of investment is so imperfectly developed that the saver and the would-be user of savings find it hard to get together, or if they are deterred from doing so, the saver will be forced to resort to investments under his own direction which may yield less, perhaps much less, than is being earned elsewhere. Thus a wealthy merchant of mediaeval Europe might invest his savings, beyond what he could use in his own business, in jewels and rich furnishings while very profitable opportunities existed in other branches of trade. No doubt these durable consumers' goods yielded some-

8. This explanation of the familiar practice of capitalization differs from that of the so-called psychological theory in denying that the valuation of rent-bearers is the heart of the interest problem. It agrees with the contention of the supporters of this theory that the rate of capitalization is not independently arrived at, but determined in a savings market of which sellers of rent-bearers are an integral part.

thing above their cost in most cases, but there were probably exceptions.

In like manner, unfamiliarity, imperfect liquidity,[9] or taxation of the earnings of invested savings will check the flow of funds into certain channels. The first effect of a tax on funded incomes, for example, is not to discourage saving, as is often supposed, but to divert savings in some degree into investments which do not yield any income in the business sense, such as durable consumers' goods for the saver's own use or that of his heirs. The barriers of unfamilarity and uncertain liquidity have greatly diminished in importance in modern times. Savings banks and similar institutions make investment in a wide variety of enterprises accessible to even the most inexperienced; and the great development of organized security markets has made it so easy to "realize" on investments that the modern father "provides" for his widow and children, not by accumulating stocks of consumers' goods, but by leaving them a factory or part of a mortgage on a railroad. The equalization of investment earnings, tho even now not complete, is much greater than it once was.

This analysis of the forces governing the rate of interest differs in important respects from the much discussed and widely accepted "productivity" theory. For one thing, it does not make the superior efficiency of the roundabout process the sole or even the principal determining factor, but treats the other uses of savings as coördinate in every important sense. Of course, the exponents of "productivity" have neither denied nor completely ignored the existence of these other uses, but their attempts to make a place for them within the framework of their theory have never been satisfactory. To say, for example, that borrowers for such uses must

9. Cf. Lavington, Economic Journal, xxii, 401–407.

be able to pay as much as borrowers for productive investment is perfectly true, but it does not explain why they can pay anything at all, or how much they can pay, or how many of them can outbid rival borrowers for other purposes — in short, any of the real questions. On the other hand, to dismiss these uses as only another form or aspect of "productivity," and therefore covered by the general formula, is even less satisfactory. As we have seen, the yield on investments in roundabout production arises from the increased physical output of labor, and the yield on investments in durable consumers' goods does not. To explain them both in terms of productivity is plainly impossible unless that term is bereft of its original meaning and stretched to include every form of earning power. In that sense "productivity" explains nothing.

In the second place, the above analysis does not hold that the rate of interest declines with each additional unit of savings invested. Such decline ensues only when duplication of the more advantageous processes has attained a certain expansion, and no inferior investment need be resorted to until that point is reached. In fact it does not picture investment as proceeding by "units" at all. The size of the first investment is simply a matter of physical and technical fact — how many days' labor must be withdrawn from the production of current consumption goods and devoted to the production of something else; and the size of every succeeding investment is determined in the same way. And as I have already pointed out, it maintains that the *yield*, and not merely the return obtainable under competitive conditions, on all investments is reduced to a common level.

Finally, it abandons the assumption, or rather the implication, found in some versions of the productivity theory, that the savings available for a community are

"applied" to the whole body of its workers, the early installments with incredible thinness, the later in gradually but uniformly increasing plenty. It proceeds on the more realistic assumption that in very poor communities many tasks have to be performed without the aid of any "capital" at all and many durable goods have to be dispensed with. No task is so aided until those machines which "abridge labor" more effectively have been provided to some extent, and no durable good is produced until the scarcity of even more keenly desired ones has been reduced. The assumption that, as savings increase, each laborer necessarily works with the aid of a larger, i.e. more expensive, equipment runs counter to the facts.

V. The Supply of Investment Funds

1. *Saving and Interest.* The size of the investment fund available in any community depends on the amount of savings added to it and the amount withdrawn in previous years, assuming no borrowing from outside. The magnitude of each of these flows is affected to some extent by the rate of interest and to a greater extent by a group of other causes which also vary from time to time and place to place. Let us first consider the influence of changes in the rate of interest.

A good deal of ingenuity has been expended in analyzing the decisions of the man who surveys the probable trend of his future income and future needs and shrewdly maximizes the satisfaction derived from the money-income of his life-time by transfers of consumption from present to future or vice versa. Altho I cannot follow Professor Kleene so far as to say that all this is so much "mythology," [1] I agree that it is an

1. Profit and Interest, pp. 49–53.

aspect of the interest problem which has been given far more attention than it deserves. The great majority of people do not save on the basis of any such rational balancing of gains and losses, but according to some convenient working rule which the experience of their families and friends and the special needs of their own case seem to recommend. No doubt it reflects a considerable amount of trial-and-error wisdom and even some special calculation, but it is rough-and-ready at best. Moreover, when once adopted, it is followed, however loosely, without much regard for any except very considerable changes in other conditions.

The effect of changes in the rate of interest upon people who manage their saving according to such general rules is not at all uniform. The man who saves a certain fraction of his income, except when he has to meet emergencies, will save more if interest rises, for the simple reason that his total income, which contains a larger and larger amount of interest as the years go by, is larger. On the other hand, the man who aims to accumulate a certain competence will do just the opposite, as Gonner and others have pointed out.[2] Smaller annual savings suffice when aided by higher interest. Again, the man who saves all above a certain amount which he deems adequate for his present needs will do as the first — save more when interest is higher. Some saving, finally, is probably induced by the mere desire to obtain interest, with little regard for the best distribution of income over time. It is doubtful whether such savings are affected by ordinary changes in the interest rate.

We cannot, however, entirely ignore those savers who make a more systematic attempt to maximize their

2. Gonner, Interest and Saving, p. 75; J. B. Clark, Essentials of Economic Theory, ch. XX; S. and B. Webb, Industrial Democracy (1911), pp. 625, 626.

"psychic incomes." The generally accepted view that such people save more when the interest rate is high is true, it seems to me, only of a very small fraction of them, namely, those who would save nothing at less than the new (higher) rate. For the others the rational course is just the opposite. If the higher rate applied only to the *additional* saving which it seeks to elicit, or if it were made contingent upon such extra saving,[3] the case would be the same as that of the purely marginal saver. The additional postponement of consumption would, by disturbing his "equilibrium of consumption," to use Landry's phrase,[4] entail some loss of utility, and *that* loss would be compensated by the interest received on *that* part of his savings. Higher interest would draw more and more reluctant savings into the market. But when the higher rate applies to all a man's savings, as it ordinarily does, the situation is very different. Suppose a man, counting on no interest, believed he would maximize his income by saving a certain amount every year for ten years. If interest now becomes available, his life's income will be increased, all the increase coming in the future if he continues to save at the same rate. It seems almost certain that he could get a better distribution of income by transferring some of the increase to the present, i.e. by saving less. His money income, tho increased a little less as a result, would be applied to better advantage.[5]

3. After the manner of higher wages paid for overtime only. I may add that the analysis in the text can also be applied to the problem of the influence of higher wages upon the supply of labor.

4. L'Intérêt du Capital, ch. II. Carver (Distribution of Wealth, ch. IV) reasons along the same lines. Also Rae's famous chapter on the "Effective Desire of Accumulation" (The Sociological Theory of Capital, C. W. Mixter's ed., ch. VI).

5. This conclusion is substantially the same as that of Gonner (op. cit., pp. 62–66). It seems to have made little impression on his readers, however, perhaps because he did not make it at all clear.

It has been objected that the savers considered in the above paragraph, so far as they save in order to provide for their own future consumption, would not be responsible for any net gain in the investment fund, since they would take out as much as they put in.[6] In terms of a given year, the savings of the younger members of the community would be offset by the withdrawals of the older members. This view seems to me doubtful. We must remember that such saving has not always been the rule of life — reliance on one's kin for support in old age is the older practice — and that the savings made by those who *introduce* the rule are not offset at first by withdrawals by persons who saved for this purpose earlier. There are no such persons. The old are still being supported out of current earnings. Accumulation gets a kind of head start over consumption and *keeps it* as long as this kind of saving continues. The reaction of these savers to changes in the interest rate is therefore not without bearing on the investment fund.

The influence of the interest rate on withdrawals from the fund is no less complicated. Such withdrawals may be made by any holder of invested funds. He has at his disposal in a given income period at least the maturing results of past labor applied at his expense, and in most modern communities much more. For tho his own investments may necessarily mature gradually, he can generally find other men seeking employment for savings who will take his unmatured holdings off his hands and put him in immediate control of all his principal. Every continuing society has such regular recruits to its would-be investors.

Let us first consider those persons who make some

6. Mill, Political Economy, Bk. IV, Ch. IV, Sec. 3; Wolfe, Quarterly Journal of Economics, xxxv, 16.

systematic attempt to make the most of their resources. A man who, expecting no interest, had decided that a certain annual depletion of his principal would be the most advisable course, would find his present income increased more than his future income if interest began to be paid on his invested savings. They yield less interest as time goes on because they are being exhausted. It will therefore be to his advantage to transfer some income to the future — to consume his principal less rapidly.[7] On those owners of invested funds who follow a kind of working rule in dealing with their gross incomes the effect of a higher interest rate will be more varied. Those who spend all their net income but steadfastly refrain from trenching on their principal will obviously withdraw nothing at all; while those who prefer to maintain a given level of expenditure, even if it involves some "living on their capital," will be able to follow their plan without spending their principal so rapidly.

The net effect on the investment fund of increases in the rate of interest will therefore depend on the relative importance of these numerous groups — an increase if certain of them predominate, a decrease if others do. Strictly speaking each situation presents a special problem, but a few generalizations are possible. As societies grow older and richer the number of persons and organizations dependent upon invested wealth for some or all of their needs increases. So does the number of those who will not spend any of their principal, partly because many bequests impose such a condition, partly because this simple rule for maintaining family prestige gradually becomes a tradition or, in extreme cases, an obsession. In younger societies, on the other

7. Cf. Gonner, op. cit., ch. VI, where the same conclusion is reached by a somewhat different line of reasoning.

hand, where more people are "on the make," the types which save less when interest rises will be more likely to outnumber the others. The relation between saving and the rate of interest varies according to time and place. Indeed, I am skeptical of attempts to describe the supply curve for savings even for a given country at a given time.

2. *Saving and Other Factors.* The transfer of present income to future by saving is designed, even in the rough-and-ready plans referred to above, to replace a smaller satisfaction by a greater. This comparison depends, of course, on the uses to which the sum in question can be put by the saver. If the future uses have a stronger appeal or sink more slowly in attractiveness,[8] saving will be promoted, and vice versa. The matter is exceedingly obscure. It is not simply a question of the diminishing satisfaction afforded by successive units of a particular good, or even of different items of personal consumption in the strict sense. For this problem the satisfaction of dying wealthy has just as much standing as that derived from food or shelter, if we believe men ever make sacrifices in order to obtain it.

How the wants of the future, thus broadly conceived, compare with those of the present we can not say with much confidence. It depends a good deal on factors which vary in relative importance from one age or place to another. Not a few men save, nowadays, because a careless fate has failed to endow them with the imaginative capacity required for successful spending on a large scale.[9] Even the grim satisfaction of leaving their

8. This is quite possible, whether men undervalue the future as such or not. If they do, the appeal of future uses is somewhat weakened and saving discouraged. Even if we grant that this is a universal human trait, — and I am doubtful about it, — we must assign it a very minor rôle in the explanation of interest.

9. Note that this refers to spending in the strict sense, i.e. for current consumption. Analogous reasons, however, may lead the saver to invest in securities rather than durable consumers' goods.

executors a larger task may exceed the rapidly failing opportunities of the present. It is possible that the intense and specialized character of modern business life tends to increase the number of such men. Public opinion is a potent factor in other cases. The owner of a large fortune may prefer the favor of a public expectant of benefactions and grateful for productive investment to any extensions of present expenditure. Prestige, power, ambition for self or others may also be counted among the satisfactions acquired through saving which pall but little as more and more of them become available. Where power is more readily gained and affection more adequately expressed by the building of fortunes, the appeal of the future uses will be stronger. The trend seems to be in that direction.

Finally we must note a minor factor affecting the growth of the investment fund. As pointed out above, the introduction of the practice of saving to provide for one's own future needs gives accumulation a start over the spending of savings. Such conditions, therefore, as favor the spread of this practice will tend to increase the fund. When the family is of great stability and coherence, men are more likely to rely upon the labor of the younger members for support in old age and other need. The weakening of the family throws upon the individual the task of providing for himself — by saving. In these days only the very poor rely on anything else as a normal thing. A state old-age pension paid out of current funds is substantially equivalent to a return, in part at least, to the practice of depending on the labor of the young for the support of the old. The amount saved for this purpose will also vary according to time and place. If it is customary to plan for a long period of "retirement," or if men wish to be able to relax during these years from the strict frugality of their youth, saving will be greater than in societies where ideals are different.

VI. Conclusion

Four principal conclusions emerge from this discussion. In the first place, the great unifying factor in the interest problem is the demand for consumers' goods. It is this which determines the surplus of value over cost in the scarcity-reducing investments, the declining yield of all duplicative investment, and those changes in the wages of relatively scarce kinds of labor which sometimes play a part in determining the gains from the roundabout process. Secondly, we can not explain interest in terms of productivity. The term is either too narrow to cover some of the important uses for savings or so broad that it means no more than earning power — the very thing that needs to be explained. Thirdly, duplicative investment, the repeating of a given use for savings as more resources become available, is at least as important a factor in the decline of the interest rate as the necessity of resorting to less advantageous investments. As a result a considerable amount of savings can often find employment without forcing interest down. Finally, the sources from which interest is derived, the extent to which they tend to combine in a general market rate, and the relation between saving and other conditioning forces, all are bound up with the social milieu and change along with it. Interest can not be explained in the same terms for all times and all people. It is not even an inevitable phenomenon of competitive societies.

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MOTOR-CARRIER REGULATION AND ITS ECONOMIC BASES

SUMMARY

Introduction, 604. — Circumstances under which motor-carrier regulation has developed, 606. — Characteristics which explain the regulation of railroads and other utilities largely absent, 608. — Restriction of entrance must be distinguished from other phases of regulation, 613. — Such restriction only partially explained by the nature of the industry, 615. — Protection of railway interests the dominant consideration, 620. — Delicate problems involved in granting of certificates of convenience and necessity, 625. — Difficulties and dangers of regulation exemplified by motor freight regulation, 632. — The theory of special highway use improperly reflected in motor-carrier regulation and taxation, 639. — Conclusion, 646.

MOTOR transportation should be defined broadly so as to cover all operations of motor vehicles on roads and streets; but when for any reason analysis of the industry is attempted, some classification of its diverse elements is necessary. The more obvious divisions are those into passenger and freight movements, into rural and urban operation, and into the use of vehicles privately, that is, in the service of their owners, and as carriers, or in the service of others. It is convenient to subdivide motor carriers in two ways, distinguishing, first, common carriers, which undertake to serve all applicants, indiscriminately, from contract carriers, which make special arrangements with each patron on a trip or time basis; and, second, carriers operating on regular routes and between fixed termini from carriers going anywhere for hire. These may be referred to as regular and irregular carriers. Much further classification is possible, but is not required here.

Regulation, likewise, may be inclusively defined so as to cover all state action that affects the conduct of the industry. Control in this sense includes traffic laws which are designed partly to reduce accidents and relieve congestion and partly to protect the highway. It includes the amount and the manner of assessing the special taxes and fees levied for highway purposes and, more fundamentally, the policies which the state, as owner of the highways, pursues in developing them. It includes also — and this accords with the usual and narrower sense of the term — the regulation of motor carriers, or a part of them, as a public-service industry. Over forty states, in the case of passenger carriers, and thirty, in the case of freight, exercise over rural or interlocal operations a control that consists typically of the requirement that a certificate of public convenience and necessity be obtained, liability insurance or an indemnity bond taken out, vehicles operated and maintained with special care, rates filed and adhered to, periodic reports made, and routes, schedules, and the quality of service subjected to supervision. It is with this regulation, and particularly with the part of it which most definitely stamps the motor carrier as a public utility, that the present article is concerned.[1]

These state laws, mostly a product of the last ten years, seem to have been less noticed by the public than other comparable instances when public regulation has been inaugurated. But when the United States Supreme Court in 1925 deprived the states of much of the author-

1. The purpose of the present article does not require a detailed description of the regulatory laws in effect nor of the decisions rendered under them by commissions and courts. An annual digest of the laws is published by the Motor Vehicle Conference Committee, and they are capably analyzed, particularly from a legal viewpoint, in three articles by D. E. Lilienthal and I. S. Rosenbaum: Journal of Land and Public Utility Economics, July, 1926; Columbia Law Review, December, 1926; and Yale Law Review, December, 1926.

ity previously exercised by them over interstate motor-carrier operations,[2] the ensuing movement for federal regulation enjoyed somewhat greater publicity. This was due mainly to the series of hearings conducted in thirteen cities by the Interstate Commerce Commission, from which over 5000 pages of testimony resulted, and early in 1928 a final report and set of recommendations.[3] Several bills have been introduced in Congress, and hearings held thereon. Of these the first, or Cummins-Parker bill, provided for extensive regulation both of trucks and busses, whereas the last — awaiting the action of Congress as this is written — applies only to common-carrier busses.[4] While the original report on the Commission's hearings favored regulation of both passenger and freight carriers, and such regulation undoubtedly is favored by the state utilities commissioners whose national association has been a chief factor in drafting the bills for interstate control, the alignment of interests directly involved makes favorable action on the broader program unlikely, at least at present. The amount of attention thus given that relatively small part of motor-carrier operation which is interstate may seem disproportionate; but the information gathered, if exploited intelligently by the states, may well lead to considerable improvement in their own regulation. The economic basis of sound control is the same, whether exercised by state or nation.

While the problem of motor-carrier regulation is

2. In Buck *v.* Kuykendall, 267 U. S. 307, and Bush Co. *v.* Maloy, 267 U. S. 317.

3. Docket No. 18300. Perhaps the most illuminating of the hearings was the final one, held February 10, 1928, at which exceptions to Examiner Flynn's report were heard and discussed.

4. The published hearings on Senate bill 1734, Sixty-ninth Congress, first session, held in March, 1926, and on House bill 12380, Seventieth Congress, first session, held in April, 1928, contain much information and many sidelights on the problem of regulation.

better understood as a result of recent investigations, reasons exist which retard a just analysis of it from the public standpoint. Incidentally, these features of the problem give it some flavor of novelty for the student of public-utility control. It is noteworthy, for example, that while public control is usually presumed to spring from an expressed public need, motor-carrier regulation has come almost wholly through the efforts of interested, but diversely interested groups, not including the shipping and traveling public. It is also significant that while motor carriers have been promptly placed in the same general category with the railways and the gas, water, and power industries, and the regulatory laws in effect have been passed by legislatures, construed by courts, and administered by commissions whose manner of approach and habit of thought have developed in connection with these utilities, nevertheless in important respects motor transportation is essentially different. Still another exceptional feature is the fact that regulation has been undertaken, at marked variance from the regulation of railways, during the early developmental period of the industry, and is therefore a factor in that development — a circumstance contributing to the difficulty of control and the need for responsible exercise of it. Finally the point should be borne in mind that the normal opposition in this country to extensions of public interference with business was, in this instance, kept from appearing by what may be called the momentum of two traditions: the tradition established in the case of railways of extensive regulation in the transportation field, and the far older tradition of looking upon the use of public highways as a place of business as a special privilege that may properly be denied or abridged in any way. Motor vehicles serve as common carriers and they use

the public roads. Under these circumstances regulation, well or ill considered, is more likely than if the case for control, and for each feature of it, had to be demonstrated *de novo* to the satisfaction of a skeptical press and public.

The purpose of the present discussion is neither from a practical standpoint to criticize the regulation of motor carriers now in effect nor to advocate a program of control. It is simply to present separately for examination upon their respective merits considerations which too often have been scrambled together into an inscrutable aggregate, almost as baffling as the outcome of a political campaign fought on the basis of a dozen unrelated issues.

Motor Transportation Not a Typical Regulated Industry

The railroads transport goods and people between places and are very extensively regulated. Motor carriers also carry goods and people between places and should therefore be similarly regulated. Occasionally expressed, but more often implied as not requiring statement, this bit of reasoning is involved in many pronouncements, official and otherwise, regarding motor-transport control, and is made, unconsciously perhaps, an important element in the foundation upon which it rests. The approach is categorical, rather than realistic; and this is often so to a degree that rivals any similar tendency which the college class room may evince. Clearly the motor carrier should be subjected to regulation as a public utility only in the face of a full recognition of the differences between it and the other members of that group.

Businesses have long been regarded as affected with a public interest whenever, through a lack of continu-

ous and complete competition, they were in a position to injure the consumer by withholding service or charging unreasonably for it.[5] A number of functions, as those of the smith, the doctor, and the victualler, once regarded as "public" services have, under the fuller competition of recent times, been omitted from the category; but the carrier remains in it. Alternative carriers have seldom been so readily available as to make the refusal of service by one of them a matter of slight importance. The uniqueness of this service has doubtless been emphasized by the peculiar responsibility of the carrier with regard to the person or property of another; and, given impetus by the crude and lawless conditions of an earlier period, an extensive body of law has developed defining the common carrier's liability.

These features are common to all agencies of transportation, road, rail, air, and water; but regulation in its more advanced form cannot be explained by them. It was only when a developed railway system had established a geographic specialization unprecedented for scope and nicety of articulation, and had made the availability of markets a vital matter to the new giant industries and producing areas which it had created, that common-carrier behavior came to require a precise and positive control. Nor is this an adequate reason if taken only in conjunction with such likelihood of abuse as the nature of the earlier agencies revealed. With the railroads the danger was not that needy applicants for service *might* be refused or overcharged, if the carriers were so disposed; but rather that the great original outlay of the rail lines, their confinement to fixed routes, and the range of possibilities in apportioning indirect

5. Fully discussed by Bruce Wyman, Public Service Corporations, vol. i. He concludes: "A review of all of the instances which have been cited in the course of this whole discussion will show that this conception of virtual monopoly will cover everything."

costs among a multiplicity of specific services, necessarily made competition extremely bitter or else eliminated it, and caused flagrant discrimination to be the natural outcome.

The local utilities which provide water, gas, electric power, and street-car service are similar to the railroads as respects monopoly, altho they have not the same opportunity to discriminate. The distinctive common attribute of these industries is that the sale of their product requires the extension of their plant to every customer. In view of this feature the original investment must be so large as to discourage competition; and, more important, any competition that appears is only partial, since complete superimposition of a new plant upon the old one is quite improbable. Since, moreover, additional service can be provided much more cheaply by extending the existing concern, the public has a positive reason, not elsewhere present, for frowning upon the competition which it normally favors. A further consideration is the obvious objection to an unnecessary exercise of eminent domain, and the use of streets for more tracks and pipes than are required. Partial monopoly, at least, thus seems inevitable, and fairly complete monopoly economically desirable; and in either case a degree of control is required in the public interest which elsewhere we look to competition to perform. It is in connection with this group of industries, including the railroads, that state legislatures and public-utilities commissions have developed their philosophy and method of regulation.[6]

Against this background consider the motor carrier. Take, for comparison, the case most like the railroad,

6. The warehouse industry, which is also regulated, lacks certain of the characteristics mentioned, and the telephone industry is different from the others in certain respects; but these exceptions have no bearing upon the contention made regarding motor carriers.

that of the operator on a regular route. There has in his case been no charge of failure to perform the elementary duties of a common carrier, of serving equally all who apply; nor would remissness on this score alone justify extensive regulation. Furthermore, the organization of the motor-carrier industry is almost wholly devoid of those features which have made a large degree of monopoly inevitable, and the restriction of possible competition peculiarly desirable, in the industries discussed above. Competition is not restricted by the confinement of operations to a rigid system of rails or pipes, nor discouraged by the magnitude of their cost. Common use of a highway by competing lines does not embarrass them, for a given number of vehicles is as well served by a road if they belong to a dozen operators as if they belong to only one. The motor carrier may, and usually does, begin in a small way, and as traffic increases more vehicles are added and additional terminal space rented. Indirect costs may be kept in closer relation to changes in revenue than in the majority of unregulated businesses. If a venture proves unprofitable, little capital has been irretrievably sunk, for vehicles may be shifted to another locality or type of service. In contrast with the railways, motor freight transportation is neither internally organized nor externally related to the larger aspects of industrial organization so as to make the adjustment of rates a serious problem. The characteristics which led to regulation of the railroads do not inhere in transportation as such.[7]

Diverging sharply from the recognized utilities group, the field of motor transport has invited competition even more freely than most unregulated industries. A single bus or truck, bought second-hand, perhaps, or

7. This position was taken by Commissioner Woodlock in a separate but concurring opinion in the final report of the Interstate Commerce Commission on Docket No. 18300, p. 750.

with a small down payment, is practically all that is required to begin business. Many persons to whom most avenues of independent enterprise have been closed by the dominance of large-scale methods have seen here their chance to leave the ranks of hired workers. Often unwise in their decision and usually unbusinesslike in their methods, they have created a competition that is frequently uneconomic and destructive, and may well require regulation — a point to be considered. But it is a mistake, and a common one, to confuse the objectionable features of the competition thus created with those more fundamental reasons because of which competition is uneconomic and is usually absent in the other utilities.[8]

Thus while motor carriers may be deemed a public utility, the starting point in regulating them is not a need for protection against monopoly; and while their business is transportation, they are quite unlike the railroads in several vital ways. It goes without saying that whatever regulation is applied to them should arise from their own peculiar features, and not through the *tour de force* of impounding them in old categories. But while the progress of motor-carrier control has been prompted by mistaken analogies, and some aspects of it have perhaps been exaggerated on that account, the specific regulations in effect are, on the whole, pretty clearly related to features of the industry that indicate the need of some sort of interference. Certain of these features will be discussed.

8. As, for example, in this statement of E. V. Kuykendall of Washington, as chairman of the Committee on Motor Vehicle Transportation of the National Association of Railroad and Utilities Commissioners: "Actual experience has proven its benefits [those of a certificate of convenience and necessity] to the public by eliminating needless duplication of facilities, and tending toward economy of operation, in all lines of utility service. It is more essential in the regulation of motor vehicle transportation than in any other field, for the reason that it is a character of business that may be entered with a minimum of investment." Proceedings, 1922, p. 80.

Types of Regulation

The reasons generally advanced for regulating motor carriers are various. Certain very simple and elementary abuses have been stressed, such as misleading advertisement of the service to be performed, the actual sale of round-trip tickets without making the return trip, and the stranding of passengers in case of breakdowns. The frequency of accidents, giving rise to personal injuries and property losses, has been a natural object of attack; as has also, and more particularly, the incapacity of operators to indemnify claimants in such cases. Then there is the multiplication of vehicles beyond the possibility of capacity use for all of them; the deleterious effect of competition upon the stability of service; and the likelihood that uncontrolled operation will cause the curtailment of essential services performed by the railroads.

Persons who favor extensive public control of motor transportation are inclined to lump the above considerations together as a single argument for the regulation they desire; but, manifestly, some discrimination is required. Fraudulent practices do not suggest the need of public-utility regulation; and futile attempts at service must stop for want of patronage. Such conditions require no special treatment because they appear in the transportation field. On the other hand, it is an admitted fact that the movement of motor vehicles over the highways is dangerous, and it is only a matter of common prudence to impose especially high standards of vehicle maintenance and operation upon those who have in their care the lives and property of other people. And since losses and injuries do occur, and many motor carriers have insufficient capital to meet the lawful claims against them, the withholding of permission to

operate from such as do not give adequate evidence of their financial responsibility,—if not otherwise, through taking out liability insurance or indemnity bond,—seems an entirely reasonable extension of authority.

This aspect of regulation, while possibly first in importance and possessed of difficulties of its own, need not be extensively discussed here, for its economic implications are slight. The insurance requirement imposes, at least in the case of passenger carriers, a sufficient burden incidentally to deter certain prospective operators whose intentions are not overserious. Because of the magnitude of the burden, it is important that it should not be imposed on one class of carriers while another class, competing directly or indirectly with the first, is exempt. Unequal conditions of competition are uneconomic in their effect upon the organization of the industry. The point is commonly overlooked that regulation of this sort need not logically, and probably should not practically, be limited to such a class of regular or common carriers as may be defined and established by law primarily with reference to some other entirely distinct phase of regulation. It is not because common-carrier liability is assumed, but because of the frequent occurrence of default in meeting claims and of grave injury resulting therefrom, that liability insurance should, for example, be required. It may be as necessary for furniture movers as for regular freight lines, and for sight-seeing busses as for those on regular route.

But the point chiefly to be made is that regulation of this sort belongs in a different category from regulation which proceeds upon the theory that restriction of competition is necessary. The former is designed merely to prevent the abuses of careless and irresponsible operation, and would refuse permission to operate

to no carrier able to meet prescribed standards and furnish stipulated guarantees. It is confusing to designate a permit granted on these terms as a certificate of convenience and necessity; nor does the issuance of such permits necessarily require the services of a public-utilities commission. This point is worthy of great emphasis because of the persistent refusal in certain quarters to see that when the wisdom of this type of regulation has been agreed upon, the question is as open as it ever was as to whether real restriction of competition is desirable.[9] It is generally agreed that control of extensions of service through the device of requiring certificates of public convenience and necessity is the central feature of motor-carrier regulation, and this feature alone places it on the plane occupied by the control of other public utilities. The desirability of such regulation must be considered on grounds strictly relevant to it, and be envisaged both from the standpoint of motor-carrier service itself and from that of its effect upon the steam and electric railroads.

Restriction of Motor-Carrier Competition

A tendency is evident among the proponents of motor-carrier regulation to focus attention upon the benefits it will confer upon the industry itself and its patrons, rather than upon the need for protecting the railways. It is fitting therefore to consider the grounds for holding that, if a satisfactory motor-carrier service is to develop, no operation should be permitted until the public convenience and necessity of it has been demonstrated to the satisfaction of a public-service commission. The effect of this policy is commonly to eliminate

9. See, for instance, the hearings on House Bill No. 12380, Seventieth Congress, first session, pp. 274 ff.

competition among carriers in the certificated class. Are there conclusive reasons for such a policy?

The peculiar intensity of competition noted above seems to be the main consideration. The possibility of beginning business with small capital has attracted more operators in many cases than the traffic has warranted; and the abundance of equipment, coupled with a very general ignorance as to the setting of remunerative rates sufficient to cover all costs, including depreciation, has resulted in a mad scramble for business. In consequence the responsible enterprise which has looked to the future has been unable to achieve a secure position and establish standards of efficient and continuous service. Nor does the early failure of poorly managed concerns provide relief, for more of the same sort take their places, and migratory operators are at any time likely to appear and cut into the traffic of a busy period. So runs the argument.

As a remedy for excessive competition, it should be noted that the certificate of public convenience and necessity is practically meaningless except as it applies to the need for service on a specific route. When, as in some states,[1] the commission undertakes to pass upon the need for a larger number of irregular carriers in any territory, it is clearly passing outside the accepted scope of public-utility control. Between that and fixing the number of grocery stores which a community may have, there is no very formidable gulf. It may be possible to work out a system of negative certification for irregular operators to the effect that public convenience requires them to avoid competition with regular carriers; but the certificate would still refer to the specific route.

While the motor carrier differs essentially from the

1. In Ohio, for instance; also provided for in Senate Bill 1734, Sixty-ninth Congress, first session.

recognized public utilities, reasons nevertheless exist why a high degree of competition on a definite route may reduce the quality of service rendered. Transportation service is an immaterial product which must be sold where and when it is produced. Most routes offer a very limited market, so that a new carrier cuts seriously into the revenue of existing lines; and as long as a schedule is maintained, costs cannot be reduced appreciably. New and improved equipment, especially on the passenger side, is so obvious in its appeal that the hold which existing carriers have on their patronage is very tenuous. These features intensify the effect of competition, and, it is alleged, make the field unattractive for investment purposes to responsible business people. Of special moment are the probable interruptions and irregularity of a type of service which acquires its value to the community largely by reason of its stability and continuity. Another advantage of restricted competition, comparable to that of the "conferences" of ocean liners, is the more rational scheduling of the service that is possible under a single control.

While these considerations apply chiefly to passenger carriers, and while little has been said of the value to the public of restriction of competition for motor trucks, there is still something to be gained through granting some protection to regular motor freight lines. Especially in communities where railway and express service are entirely absent or very poor, — and there are many thousands of them in the United States, — a dependable common-carrier trucking service is of vital importance to small shippers and local merchants who cannot contract for truck-load movements. Such service is highly exacting and parts of it are not very profitable, while at the same time it is especially open to inroads from irregular haulers. Its importance to the com-

munities served may often warrant a protective control over it. The conclusion is not warranted that regulation now in effect is well calculated to achieve this result, tho it must be admitted, as will be shown below, that such protection is not easy to accomplish.

As was said, the chief means of preventing the demoralizing effects of excessive competition is to withhold certificates from all applicants whose facilities are not thought necessary. Supplementary measures which may be construed as having the same end in view are the requirements that rates and schedules be filed and adhered to, accounts kept in a prescribed manner, and satisfactory service continuously rendered if certificates are to be renewed.

It is quite possible to attach undue weight to the reasons just stated for these regulations. The unusual intensity and irresponsibility of competition, upon which the whole argument rests, is more the outgrowth of the youth of the industry than of any permanent characteristics which it possesses. Competition is not cutthroat in the same sense as in the other public-utility fields; it is rather the result of ignorance and of exaggerated ideas of possible profits. Mortality is high in most new industries. Quite obviously it cannot be permanently true that a field of service is unusually seductive in its appeal to new entrants and exceptionally harsh with those who enter it. There is already much evidence of increasing stability, even under conditions of competition. Competition, moreover, has a way of eliminating itself, even when the public strongly desires its continuance and takes measures to preserve it; so that regulation in the past has been mainly concerned with the abuses of unavoidable monopoly, rather than with the undesirable slowness of its unassisted appearance. Be that as it may, combination is

coming very fast in the motor-carrier field, quite apart from the stimulus of regulation. But it seems a bit strange for competition to be so generally deplored in this connection, in view of the high place it holds in our general industrial organization. Progress in all phases of motor transportation has been spectacular; and who can say with assurance that it has come wholly in spite of the intense competition which has prevailed, or would have been entirely compatible with the stability and regularity so commonly desired?

The writer is not disposed to belittle the improvements in service which may reasonably be credited to the sort of regulation under discussion. There is no issue here, as some assume, between competition and regulated monopoly; for even the granting of exclusive certificates on regular routes still leaves so keen a competition from private and anywhere-for-hire vehicles and from steam and electric railways that real monopoly is out of the question. The benefits of a wise restriction of competition seem clear enough. The reason, however, for presenting the matter in this light is to indicate that the case for regulation — except as it applies to safety and responsibility — is not especially impressive, so far as the interests of those who patronize the motor carriers are concerned. It is not surprising that there has been no general public demand, but that the public seems quite well satisfied with an overabundance of facilities and very low rates. It is understandable that the bus operators who are seeking the passage of a federal law chiefly concerned with the matter of certification should encounter a rather skeptical attitude of mind on the part of a number of members of the committees of Congress directly concerned. In fact, the opinion seems a reasonable one that, to account for the extensive development of motor-carrier regulation on

the part of the states, one must turn from the characteristics of the industry itself and the benefits which its patrons may expect to derive from its control, and regard primarily its relation to the steam and electric railways. At the same time, regulation has undoubtedly been rendered palatable to many who now support it, by the considerations just reviewed.

Motor-Carrier Regulation to Protect Rail Carriers

On *a priori* grounds it appears that the rail lines, steam and electric, must have been a chief factor in initiating the movement for motor-carrier control. The public did not demand it, and we can hardly suppose that the motor carriers themselves sought it in the first instance. But the interest of the rail lines is clear enough; their efforts have been obvious; their influence is undoubted; and their case, properly put, is a strong one. While not prepared to generalize regarding the legislative histories of the various state regulatory acts, the writer believes the case of California to be fairly typical. There the Supreme Court, "upon petition of the short-line railroads of the state, ordered the Commission to assume jurisdiction over automotive carriers under a provision of the state Constitution adopted a quarter of a century before automobiles were invented. The next year, again at the behest of the short-line railroads, the Legislature passed a comprehensive statute providing for the regulation of 'transportation companies' by automobile." [2] The attitude of the railways toward motor transportation, at least in its official expression, has changed from outright hostility to acceptance of the motor carrier as an established fact, with

2. Quoted from Frost *v.* Railroad Commission, 271 U. S. 583.

their efforts directed toward removing unequal competitive conditions, preserving essential rail services, and coördinating the two agencies.[3] In the specific instance, however, the rail lines almost invariably find cause for appearing before the state commissions in the person of their able attorneys — often conspicuously able, as compared with those of the motor carriers — to show that the proposed service over the highways is against public interest. When, as in one instance, two great steam railway systems and two strong electric lines controlled by powerful utility interests unite to oppose the application of a man desiring to operate a single truck between two nearby cities, this attitude is indicated in a striking and rather amusing manner.[4]

In support of recent motor-carrier laws, including the proposed federal act, the bus interests have been as active as the railroads. This fact has been commented upon as somewhat contrary to precedent, and indicative, perhaps, of a more reasonable attitude on the part of regulated industries. The observation is without point. The central feature of motor-carrier control, as we have seen, is restriction of entrance to the field, not burdensome regulation of those already in it. Established bus lines are as opposed to the appearance of new bus lines as are the railroads; and it is the present, not the prospective operator, who has a voice to influence legislation. But let a law be proposed which, with respect to the issuance of certificates or the fixing of rates, clearly defines a guiding principle such as rep-

3. See the brief of Alfred P. Thom, General Counsel of the Association of Railway Executives, submitted to the Interstate Commerce Commission, Docket No. 18300.

4. A Wisconsin case in 1928. The writer attended another hearing in Wisconsin where the transfer of a small bus line to a larger company was opposed by a similar array of rail interests, and where the railroad attorneys had clearly not been instructed regarding the newer official attitude.

resents the real desire of the railroads in seeking motor-carrier control, and the bus interests would in preference do without any regulation at all. This has been repeatedly illustrated in the Congressional hearings, and more especially in the conferences of the several interests prior to the introduction of the bills. The phrasing agreed upon at all important points is commonly so general as to be almost meaningless, the conferees seemingly preferring to take their chances with the courts, once legislation has been enacted.

A complete account of the alignment of interests would take account of various other factors. Thus, while bus operators may agree that certification is desirable, no operator wishes to have to prove the existence of a public need in his own case; accordingly the determination of the date of commencement of operations after which the requirement of a hearing is imposed is a matter of sharp disagreement. On the freight side of the industry a small minority of regular carriers desire regulation for the same reasons which actuate the passenger carriers, but the great mass of trucking companies is opposed to public control, largely for reasons to be considered below. Shippers are also against it, in so far as they have been articulate at all. But the railways, especially the short lines, would have the motor freight haulers regulated; and, as a matter of fact, they are regulated in a majority of states. The attitude toward bus control of some of the steam railways, and of many of the electric lines, is complicated by the fact that they have themselves become extensive operators of motor busses.[5]

5. An interesting alignment appeared in a recent case where the constitutionality of the Wisconsin motor-carrier act was attacked by a large motor freight line. Although the several provisions of the act are entirely separable, the Wisconsin Motor Coach Association elected to become co-defendant with the Railroad Commission. Probably the chief

More important for the present purpose than the attitude and influence of the railroads is the substance and merit of their case for motor-carrier control. Statistics which show the reduced operation of interurban electric lines, and the falling off in the passenger and less-than-carload freight business of the steam railways, reflect in large measure the effect of the private use of motor vehicles.[6] Only such relief from their competition seems feasible as may be found through requiring them to pay adequately for the use of the highways. But the competition of trucks and busses in motor-carrier service is an appreciable factor, particularly when attention is turned from averages and totals, which mean little, to the condition of particular railroads and the justification for continuing specific branch lines and given train services. Motor transportation, moreover, is progressing rapidly, as is also the improvement of highways upon which its effectiveness greatly depends; so that greater inroads into the railway business may be expected. The record of the meetings of the newly organized Motor Transport Division of the American Railway Association indicates the importance attached to this form of competition.

There can be no doubt that the railways will continue to be the principal transportation agency of the country, and that for most of their business the motor vehicle is not an economic substitute. The services which they alone can provide are produced jointly with those for which motor transportation is a desirable substitute; and instances naturally appear where the revenue from

reason was the fact that the most influential bus operator was a large utility corporation which owned an electric line doing an important freight business. State of Wisconsin ex rel. Northern Transportation Co. *v.* Railroad Commission of Wisconsin, et al., 220 N. W. 390.

6. Evidence as to the effect on railway traffic and revenues is contained in the Interstate Commerce Commission's final report on Motor Bus and Motor Truck Operation, Docket No. 18300, pp. 721 ff.

both is necessary if the former services are to be continued. If traffic is to be lost by the railroads, some assurance is desirable that the loss is truly a reflection of the superiority of motor transport, and not the result of temporary or unequal competitive conditions, as when motor carriers take the better-paying traffic and leave the rest, run only when traffic is heavy and weather good, or charge uneconomic rates either because of irresponsible competition or because too little is charged for the use of the highways. Even so, many cases appear where both the motor and rail services cannot be supported by the traffic, and then it is desirable that a disinterested judgment be rendered as to which service is on the whole the more important to the community. And when rail service is curtailed, means should be at hand to impose the same responsibility as to regular and continuous service upon the motor carriers as has rested upon the railroads.

These considerations are offered by the railroads to justify their efforts to obtain protection from motor-carrier competition. There are other arguments, and, as is natural, many overstatements. The regulation which the railroads desire would make the issuance of certificates to motor carriers depend largely upon the probable effect on railway traffic and revenues, and would stress the service obligations of motor carriers, the adequacy of the rates they are permitted to charge, and the payments they make for the use of roads. The vital position occupied by the railroads argues strongly for the adoption of such a program, or as much of it as is necessary to maintain them in full vigor. At the same time, undue preoccupation with the railroad viewpoint may easily blight in some measure the great achievement and promise of motor transportation. The opportunity and the incentives for motor-carrier de-

velopment may be diminished; and in the attempt to enforce regulations inherently difficult of enforcement, the industry may be forced into unnatural and uneconomic modes of operation. The difficulties of regulating seem mostly to arise from the conflicting implications of two necessary angles of approach. From one of these angles motor transportation is envisaged as an important industry in its own right, whose most advantageous development may require at one point or another a deft touch of the hand of public control; such interference, however, being governed by the characteristics of the industry itself and the interest of the public in good motor-transport service at low cost. From the other of these angles motor transportation appears as a late and somewhat obstreperous arrival in the transportation family, whose chief claim to recognition is that it threatens to some extent the position of steam and electric rail operation and which accordingly must be regulated, not because it has the features of a public service itself, but because it competes with an industry whose nature rebels against the presence of competition. Seldom in discussions of motor-transport control are both of these points of view clearly and frankly recognized.

Convenience and Necessity

Under this heading, which might well be used to cover a very extensive review of the policies of the state commissions with criticism thereof, only a few very general observations will be attempted. One of these is a statement of the proposition, clearly implied by the preceding paragraphs, that in any decision as to the need of motor-carrier service, the already-existing transport agencies are a relevant factor. This proposition has been denied by individuals and groups in a non-official

capacity, and notably by the Supreme Court of Michigan in interpreting the motor-carrier law of that state.[7] The argument of the court regarding the importance of unimpeded progress in transportation might well have been presented to the legislature before it acted; and it should certainly be considered by the commission in issuing certificates. But no conservatively minded legislature, if it understood the situation, would have found in the motor-transport industry, especially in truck transportation, sufficient reason for restricting competition and controlling it in other ways, unless the legislature was in large measure influenced by the effect on railroad traffic.

On the other hand there are states where, under a similar mandate from the legislature, the commissions and courts impose a very heavy burden of proof upon the independent motor-carrier desiring to operate in competition with existing agencies.[8] The Supreme Court of Illinois has repeatedly asserted the doctrine of regulated monopoly with respect, not to one agency, but to all transport agencies taken together, and the prior right of the railroads to make any required improvements in transportation service.[9] While the common claim of the rail lines that, in compensation for

7. Rapid Railway Company *v.* Michigan Public Utilities Commission, 225 Michigan 425 (1923). The Michigan Act merely states that permits "shall be issued in accordance with public convenience and necessity"; and the Court held that so important a factor as existing rail service should have been mentioned explicitly if thought relevant.

8. Decisions of the state commissions which deal with the relation of rail and motor transportation, and with the coördination of the two, are reviewed in an extensive report made to the Motor Transport Division of the American Railway Association at its meeting in June, 1928. See the Proceedings.

9. Three cases often cited are: West Suburban Transportation Co. *v.* Chicago and W. T. Railway Co., 140 N. E. 56 (1923); Choate et al. *v.* Illinois Commerce Commission, 141 N. E. 12 (1923); and Egyptian Transportation System Inc. *v.* Louisville and N. R. Co. et al. 152 N. E. 510 (1926).

restrictions borne and speculative gains sacrificed, they should be protected from unanticipated competitive losses, has met with small sympathy when explicitly considered by courts and commissions, the latter in some instances seem to attach much weight to such facts as the mere priority of the railroads, the extent of their investment, the number of their stockholders, and their great services in the past. Obviously a fairly wide range of attitudes is possible as to the amount of improvement in transportation service which warrants the granting of a certificate, and as to the degree of injury to existing carriers which justifies denying it.

Let it be assumed, however, that no obligation exists simply to protect the railroad investment, and that regulation is solely concerned with the public's interest in transportation. The meaning of convenience and necessity, as the phrase is applied to motor-carrier service, is then somewhat simplified. The applicant for permission to operate trucks or busses should not in the first instance be required to demonstrate the usefulness of the service he will render and the extent of the public inconvenience if permission is denied. It is sufficient if the public will patronize his service. Only confusion can result from such "wooly" concepts of demand as that "the public must be concerned as distinguished from any number of individuals." Despite the efforts of respondent carriers to reverse the situation, it is on them that the burden should be placed squarely to show wherein the granting of a certificate will adversely affect the shipping or traveling public. Their vested interest and the mere fact that they will lose business should be irrelevant. The significant thing is whether the probability of such great loss of traffic can be shown as will cause the commission, in view of its policy in that regard, to permit curtailment of rail service. If such

curtailment is indicated, then the probable inconvenience to be suffered because of it must be weighed against the advantage of the motor service proposed. In this connection, and in the interest of the railroads themselves, reasonable standards governing abandonments and reductions of service should be courageously applied. To permit motor carriers to operate when they and existing rail services cannot both be supported, and to require continuance of the rail service, is a very questionable course. On economic grounds a community is not entitled to a rail service whose assignable costs it does not and will not be able to meet. If social and political considerations warrant continuation of the service, some other source than the profitable business of the railroad should be depended upon for the subsidy.

In determining the requirments of public convenience and necessity with regard to extension of motor-carrier service the regulating authorities should be constantly aware that they are dealing, not with a fairly mature utility, but with one still in the stage of dynamic development. That transportation service is adequate according to existing standards is insufficient reason for withholding the right to operate from a carrier whose performance may shortly transcend existing standards. Conclusions have been arrived at regarding the limitations of the economic sphere of truck and bus operation which, the writer is convinced, are premature and likely to be superseded. Opportunity for progress must be left open. In this regard, one other aspect of the theory of regulated monopoly is worth noting. In accordance with that theory it is the policy in a number of states, possibly the majority of them, to give the existing certificate-holder the first chance to render more or better service, in case improvement is shown to be necessary, rather than to extend operating privi-

leges to a new applicant. This favored position may be enjoyed by the railroads. But how does the commission know when to order that service be improved? The answer is that commissioners are busy men and do not borrow trouble; they wait for complaints to be made before they act. But complaints obviously can be inspired only by deficiencies in the light of existing standards; and thus commission action constitutes a very poor substitute for competition as an incentive to progress. It is the case in some states, perhaps many of them, that an applicant who is able to give assurance of better service than is provided by the existing certificate-holder will not get favorable action unless complaints have been lodged against the latter to which he has not responded. An enterprising applicant can produce plenty of complaints, but there is no reason to do so, nor to apply at all, if the outcome will simply be that the present operator is ordered to improve his service. So the incentive fails. If this difficulty is not a serious one, the reason is that a condition of regulated monopoly, despite verbal adherence to the theory of it, cannot be established. The competition of privately operated automobiles and trucks cannot be controlled; and the situation thus created, so irritating to ardent devotees of thorough regulation, may be the saving factor which makes regulation through certificate acceptable.

With the steam and electric railways both disposed to enter the motor-carrier field in an extensive way, many questions arise regarding their status as applicants for certificates. Should they, for example, be favored over rival independent candidates for a given route; and should they be permitted to inaugurate service over a route already occupied by an independent operator, when a second independent would be denied a certificate? The tendency is for such questions to be

answered by courts and commissions in a manner favorable to the railways. The numerous specific reasons advanced for encouraging railroad operation of motor services are variations of three general ideas: first, that railroads, because of their financial standing and experience in the common-carrier rôle, make the most responsible and dependable operators; second, that the greatest savings and the fullest coördination can be achieved through unified control of both agencies; and third, that the danger to the railroads from highway competition is greatly reduced. Along these lines a most compelling argument can be developed, one which probably should be decisive. But in view of the tendency noted in the United States, it is of interest that in England seven years of effort have been required to win similar rights for the railroads.[1] Fear of monopoly seems to have been the main objection, and the continuing competition of private motor vehicles seems to have met it. But in spite of this safeguard, it should be recognized that the type of motor-carrier operation covered by certificate is sufficiently different, at least on the passenger side, so that the granting of exclusive certificates to rail operators may be a dangerous policy. Such a proposal regarding the control of water carriers would certainly be strongly opposed, and not entirely without historical basis for the opposition. It may be held that motor transportation, like tariff revision, should be entrusted to its friends, rather than to its enemies. It is indeed difficult to see how the railways

1. A. W. Arthurton of the British Railway Companies' Association writes in the Railway Age for September 22, 1928: "Never within long memory has there been so monumental an opposition to private bills as was mustered in this case. . . . The whole contest was worthy of comparison with the Homeric combats of early days of railways." Final passage, however, was by a large majority. For the earlier history and a good discussion of the matter, see K. G. Fenelon, The Economics of Road Transport, ch. XVI.

will profit greatly from their operation of motor-carrier lines — assuming that no more than a normal return is earned on the investment in motor equipment — unless they are operated with a view to keeping traffic on the rails which otherwise would prefer the highway.[2]

A wise sentiment has developed favoring a type of motor-carrier law that leaves much to the discretion and experience of the commission. In a specific instance where decision is made regarding the desirability of motor-carrier service, there are so many factors which are relevant and which appear in different combinations from one case to another, that no precise legislative formula can be laid down to guide the commission. On the other hand, we have seen that regulation may be undertaken primarily from the viewpoint of motor transpostation or from that of rail transportation, and that in either case there are general questions of policy to be decided. Certain of these are without precedent, and cannot be answered simply by reference to such concepts, with their accepted meanings, as regulated monopoly, common-carrier control, and convenience and necessity. When, therefore, the legislative branch merely provides that motor carriers may begin operating only when a certificate of convenience and necessity has been obtained from the utilities commission, it is in effect simply stating that regulation is necessary, and referring the questions of what regulation and why pretty largely to the commission, and, finally, to the courts. While it may seem that the legislature, before passing such a law, must have had some specific views regarding the public interest in the matter, this need not have been the case. Pressure from the parties af-

2. The chief benefit is supposed to be the saving from reducing train service. However, unprofitable train service should be curtailed in any case, whether the substitute highway service is supplied by the railroads or by independent operators.

fected may have been the major influence, and disagreement among those parties may have suggested phrasing so vague at all vital points as would by implication accommodate the hopes of all of them.[3] It may be that analysis of the motor-transport industry and of the problems of regulating it may better be left to commissions and courts. Yet the former are primarily administrative in their viewpoint, and the latter may be unduly influenced by dubious precedents, legal concepts deficient in economic vitality, and presumptions regarding a non-existent legislative intent. In any case forward-looking policies are desirable which take account of the nature of the industry and deal boldly with issues of the sort which have been suggested. Such policies do not grow as a grand resultant of the application of common sense in a series of individual cases, where numerous short-run political and social factors must be considered. The writer is convinced that if more attention had been given the purposes of motor-carrier control as it is found in the states, some of its more questionable features would not have appeared.

The Danger of Short-Sighted Administration

In any scheme of regulation it is essential that measures adopted to promote the public interest shall not prove oppressive, and by their deadening effect upon the industry controlled substitute a condition of orderly impotence for one of effective but somewhat chaotic enterprise. Granted that worthy public ends are to be achieved through motor-transport control, it is con-

3. It is sometimes implied that the reason why the courts play so large a part in fixing the meaning of legislation is that laws without loopholes cannot be drafted. It seems also to be the case that, in attempting to please discordant interests, legislatures pass laws into which most of the meaning must be injected by the courts. This may be regarded as a partial abdication of the legislative function.

ceivable that such considerable difficulties of administration might arise that, in surmounting them, the real purpose would be lost sight of, and the methods employed become as objectionable as the condition which caused regulation to be adopted. This danger exists when extensive control of motor freight transportation is attempted.

Since regulation of the sort discussed in this article has been proposed for only a part of the motor-transport industry, and, indeed, for only a part of the for-hire operation of motor vehicles, it is necessary to establish an effective line of demarcation setting off from the remainder that portion of the industry which is to be regulated. On the passenger side this is quite simple. Outside of cities, there are two clearly marked types, the private automobile and the common-carrier bus operating over a regular route. To the latter only is regulation applied. Some difficulty is caused by the sight-seeing and the excursion or special-trip bus, by the rural operation of taxicabs, and by special arrangements for conveying groups of workmen to outlying factories; but these services are of minor importance and quite easily defined. School busses give little or no trouble.

Motor freight transportation, on the other hand, is not readily classified for purposes of control. One of the underlying reasons is that a single shipment of goods commonly requires the total or a considerable fraction of the total capacity of a truck, whereas a single passenger occupies only a small part of the capacity of a bus. Thus, while a bus must announce a route and schedule and accept all applicants in order to obtain adequate patronage, the freight originating with a single shipper is often sufficient, if he does not own a truck, to justify the hiring of one either for a single trip,

for several trips, or for exclusive use during a specified period. Accordingly the industry is much more complex than if the regular freight line dominated it. A second source of complexity is the great diversity of goods carried and services performed, and the fact that a principal virtue of motor freight service is its nice adaptability to a wide variety of transportation requirements. Passengers are approximately alike, and nearly uniform accommodations will do for all; but no motor freight line offering a standardized service would meet the needs of a large part of the traffic that now falls to the industry. Consider, for example, the special equipment employed in moving milk, sand, gravel, gasoline, live stock, furniture, and automobile bodies. The quick marketing of perishable farm products, the stocking of chain stores from central warehouses, and the large "emergency" service growing out of the small-inventory policy of stores and factories, all require an extremely flexible mode of transport. The variety in the physical nature of motor freight transportation, in the terms according to which it is supplied, and in the services which a single concern or even a single truck will perform, makes the creation of significant categories for purposes of regulation difficult, if not impossible. Out of these conditions arise most of the administrative difficulties involved in making regulation effective.

In defining the type of passenger operation subject to control, the state laws exclude the use of busses by schools and hotels, but differ regarding the irregular operation of commercial vehicles. On the freight side, the regulated group may include every use of vehicles for hire, all for-hire operations not covered by time contracts, all common-carrier operations whether regular or anywhere-for-hire, all operations on regular routes

whether common-carrier or not, only the common-carrier operations on regular routes, or merely such regular-route operations as directly compete with steam and electric railways. Certain services, as those of furniture-movers or of trucks carrying farm products, may be specifically excluded, whatever their relation to the general definition. In some states the regulated operations are subdivided, with different provisions for each division. Wherever the line is drawn between regulated and unregulated carriers, the former are usually required to specify in advance the character of their operations and to operate only as specified, to file in advance a complete tariff schedule and to abide by it, to pay fees and taxes and take out liability insurance not required of other carriers, and to submit to a miscellany of other regulations. In the case of established bus lines, while compliance is troublesome and costly, the protection afforded by a certificate greatly outweighs the incidental disadvantage. In the case of trucks, however, the lack of standardization often makes complete obedience to the law very difficult, if not impossible, while, at the same time, protection is negligible if not negative, since carriers just over the line in the unregulated group are active competitors for the same traffic.

Under these circumstances the motor freight carrier is likely to be opposed to regulation and inclined to evade the law. To prevent evasion the administrative body must restate the law in the form of definite, concrete rules capable of enforcement. If common carriers are to be regulated, the fact of undertaking to serve all applicants indiscriminately is much too vague a criterion of amenability. The operator undoubtedly desires to preserve the right of rejecting business and of entering into special contracts, probably exercises it

occasionally, and is able to make a considerable show of exercising it in order to avoid regulation. With due regard for the principle that a carrier may not be forced into public service against its will, the commission must define the common carrier as one who undertakes to serve more than a given number of shippers or in some such arbitrary manner. The line of cleavage established is likely to be about as natural as that between tall and short men, so that two cases a hair's breadth apart come to be treated as if radically different. If the group of carriers to be regulated is defined in terms of regularity of route, the difficulty is not quite so great, tho it is often not easy to say whether the amount and character of the service rendered over a route places it within the definition.

In the normal conduct of a motor freight business, the operator giving a common-carrier or regular-route service will find it desirable also to enter into special arrangements with certain shippers and to be prepared to go anywhere with the goods of its better customers. The advantages of this flexible organization are numerous, but need not be analyzed here. For purposes of regulation, however, it is expedient to work with companies rather than kinds of service. If a concern may do both a common-carrier and a contract business, or both a regular and an irregular business, it will probably be able, in appearance at least, to keep most of its traffic outside of the regulated category, and thus evade special tax burdens and the restrictions which regulation serves to impose. In the interest of enforcement, therefore, a commission is very likely to rule that a carrier doing any business that is subject to regulation shall be regulated in all of its business. In effect, since there are no naturally existing, clearly distinguishable classes of motor freight operation, definitions of such classes may

be set up for the purpose of regulation and an attempt made to cause motor freight service to fit the mold of these definitions. The result is irritating, if not actually subversive of real economy. And since a type of operation is thus subjected to control which is identical in nature with that of unregulated companies, the incentive to evasion is enhanced, and the excuse for burdensome rules increased. If this difficulty is avoided in the first place by making regulation apply to a much more inclusive group of carriers, it is found to be extremely difficult to set limits to services, or to require rate-fixing in advance for operations, which are without the semblance of standardization as to place or character.[4]

As stated, these troublesome features of freight-carrier regulation spring largely from inherent characteristics of the industry. It would be a mistake, however, to jump at once to the conclusion that, given important ends to be gained through regulation, the difficulties are nevertheless so formidable as to discourage the attempt. Opponents of regulation have undoubtedly distorted the picture somewhat by making a fetish of flexibility and by citing instances of special "emergency" services until it would appear that motor trucks do little else. Activities may defy classification as much because of the youth of the industry as because of its inherent formlessness. Then too, freight-carrier regulation may appear in a bad light simply because of the manner of conducting it in certain states.

Much that is objectionable in present attempts to

4. The motor-carrier law of Ohio provides that an irregular operator must specify a base of operations, and every load must be either to or from this base. Thus a truck of a company located at Columbus might take a load to Toledo, but could not accept a return load for any point near Columbus, or engage in any triangular operation. Irregular truckers, however, find it natural and economical to operate very much as tramp steamers do.

control trucking operations through certificates of convenience and necessity seems traceable to a lack of clarity as to the purpose and economic justification of regulation — a point mentioned above. We have seen that regulation through certificates might be undertaken primarily to give small shippers a necessary and dependable service over specified routes, or that, on the contrary, its main object might be to protect rail transportation from destructive competition. If the former purpose were uppermost, protection of the regular carrier would seem to be the chief consideration, since this form of motor-freight service is most vulnerable from a competitive standpoint. No regulation at all would be better than a form of control which imposed burdensome restrictions, and perhaps prevented the carrier from rendering supplementary services that it would be free to render if it had not become a common carrier over a regular route. If, on the other hand, the main object is to protect the rail lines, the task is indeed a difficult one in view of the extensive competition of privately operated trucks. Nevertheless, those time-consuming and highly irritating features of regulation which arise from the attempt to draw an effective dividing line on the basis of common-carrier obligations or regularity of route are largely gratuitous and unnecessary so far as this purpose is concerned. The line between common and contract carrier, for instance, is only remotely relevant. When the commission's work proceeds from the very general legislative mandate that it require a showing of convenience and necessity in the case of trucks in common-carrier service, with no clear-cut indication of the purpose to be served, it may well become largely concerned with legal considerations as to what a common carrier is, and with getting the carriers lodged in their proper categories, and with making

them do as the law seems to provide, thereby establishing a control that, in its administration, is effective, but in its purpose and economic effect is quite uncertain. Thus the "tail" of regulation may come — and in certain states probably has come — to wag the "dog" of public interest.

The point bears repeating that regulation which seriously burdens part of a group of competing carriers is *prima facie* bad. It provides a strong incentive to evasion, making the administrative function doubly difficult, and it discourages in an uneconomic way the performance of those transport functions which are thus burdened. This is true of regulation through certificate as it is carried out in some states. It appears in even more acute form when onerous fees and taxes are exacted in a discriminatory way. This latter matter may be approached better from another angle.

The Use of Highways as a Place of Business

At the beginning of this article two circumstances were mentioned which have done much to smooth the way for motor-carrier regulation, altho they provide no positive reason for adopting it. Regarding the first of these, namely, that the product of the industry in question is transportation service, the point has been made that regulation which is based on inference and analogy is dangerous, and that all measures adopted should be indicated specifically by careful analysis of the conditions to be remedied. The same caution should be observed, and perhaps with more emphasis, in regard to the second of these two circumstances, namely, that motor carriers operate over public highways, and that, in the eyes of the law, the use of public highways as a place of business, through operating vehicles over them

for hire, is a special privilege which the state may grant, withhold, or abridge as it sees fit, without violating the "due process" and "equal protection" clauses of the Constitution.[5] Times without number the case for regulation through certificates has been bolstered up by reference to this rule, and by emphasis of the destruction and congestion of highways caused by carriers exercising the special privilege. Fully as much has it been used to justify special fees and taxes not paid by motor vehicles generally. Rather discriminating analysis is needed in both connections.

It seems obvious enough that the exercise of a special privilege is itself no reason for regulation, but is only the legal basis for such regulation as reason is found for. The fact is accordingly often stressed that busses and for-hire trucks are usually large and heavy, and therefore presumably damage the highways more than other vehicles; and furthermore that their unrestricted use adds unduly to congestion on the highways and to the likelihood of accidents. It should be noted that these considerations are not entirely harmonious. The busses and for-hire trucks which, because of their size, may be more than ordinarily destructive, are for that very reason far more economical users of road space than private vehicles. It is, moreover, noteworthy in the case of for-hire trucks, especially those on regular routes, that their loads are, on the average, a very much larger fraction of their capacity than is true of private trucks, that they usually have return loads, and that they do much of their running at night when congestion is least. Careful certification of carriers, while it probably reduces the number of vehicles some-

5. Packard *v.* Banton, 264 U. S. 140; *ex parte* Dickey, 85 S. E. 781. The rule is doubtless subject to qualifications which await final definition, and is superseded, as regards interstate traffic, by the commerce clause.

what, serves mainly to reduce the number of companies by which the vehicles are operated. If the restrictions imposed are burdensome, the type of service will be curtailed and private vehicles more largely used. To neglect the inefficient use of road space by the latter while stressing the congestion caused by motor carriers is, indeed, to eschew the proverbial gnat while gulping down the camel.[6] With regard to the alleged destructiveness of for-hire vehicles, the point must not be overlooked that many of the most damaging vehicles, such as dump trucks carrying sand and gravel and tank trucks carrying milk and oil products, are in private use, and that many more do not fall within the common-carrier and regular-route categories. No mode of transportation which destroys the highways is in the public interest; but the physical characteristics of the vehicle and not the legal aspects of its use are significant in this connection. All vehicles are subject to laws designed to protect the highway; and it is undoubtedly possible, from the legal standpoint, to establish such control as is feasible to relieve congestion, without reference to the private or carrier use of vehicles. These matters lie properly outside the scope of motor-carrier regulation. In the writer's opinion, when it is found necessary, in justifying control of the latter sort, to argue in terms of special highway privileges, and of damage and congestion caused by privileged operators, the case for regulation is probably a very weak one.[7]

6. An exception is the case of the large passenger traffic entering metropolitan centers in the morning and leaving at night. Enough busses to serve the traffic carried by commutation trains would be a very important congestion factor, so that restriction on this basis seems justified. At the same time, the extensive use of private automobiles is the worst feature of such congestion.

7. The Supreme Court of the United States has made the chief contributions to clear thinking in this connection. Thus in the case of Buck *v.* Kuykendall, 267 U. S. 307, the Court distinguished sharply between

The special use of highways for business purposes figures prominently in discussions of the additional fees and taxes required of regulated carriers in addition to those paid on other classes of motor vehicles. Such taxes are imposed by a majority of the states, and are based on the weight, capacity, mileage, gross earning, or some combinations thereof, of the vehicles affected. They are often onerous. According to one study based on the laws in effect in twenty-five states in 1925, the annual amount paid on a three-ton truck of given weight, operation, and earnings averaged $212.31 more in common-carrier than in private use and ranged as high as $535.[8] Few attempts seem to have been made to furnish a logical basis for these charges, but it is possible from discussions of them to differentiate five fairly distinct explanations which are worthy of some comment. These are: first, that the special fee or tax is levied to cover the cost of regulation; second, that it is compensation for the relief from competition afforded by possession of a certificate; third, that it is a payment for the special privilege of using highways for profit; fourth, that it is designed to cover the additional costs of maintaining and building roads properly imputable to the type of carrier in question; and fifth, that it is imposed to establish a fair competitive relation to the rail car-

protecting traffic and highways and determining who may use the highways, and decided accordingly that the former was lawful and the latter unlawful when applied by the states to interstate traffic. In the Frost case, 271 U. S. 583, when the defendant in error held that the California act was designed to insure "the proper exercise of the special privilege of using the public highways as a place of business," the Court stated: "Its primary purpose evidently is to protect the business of those who are common carriers in fact by controlling competitive conditions. Protection or conservation of the highways is not involved." One may commend the clarity of the Court and still believe that ample grounds, both legal and economic, exist for the dissenting opinions in these cases.

8. The study was by Professor H. R. Trumbower, then with the Bureau of Public Roads. See his testimony at the Senate hearings in 1926 on S. 1734, pp. 291–292.

riers, which have to provide their own roadway and pay taxes on it.

The first two of these reasons may be passed over briefly. With regard to motor busses, it is probably true that the cost of liability insurance is sufficiently reduced through certain features of regulation to justify their meeting its entire cost.[9] But whatever may be thought as to the principle of requiring a regulated industry to pay the costs of regulation, it is enough to observe that the amount necessary for this purpose would not make the fee especially burdensome. Again, the idea is often advanced that the preferred position enjoyed by the holder of an exclusive certificate justifies the imposition of a special tax; but this would seem to depend upon whether, in view of the competition of railways, private vehicles, and contract carriers, extraordinary profits are possible. At present they are enjoyed only in exceptional cases. Anyway, the states have by implication rejected this conception of the special motor-carrier tax, in as much as they continue to exact it of interstate carriers, the convenience and necessity of whose operations they are powerless to pass upon. As applied to interstate traffic, it is legal only as a payment for the use of roads.[1]

With respect to this aspect of the tax, a tendency exists to confuse the special privilege of using highways as a place of business with the quite different matter of assessing road costs incurred on behalf of the carrier in question. As to the former, clear thinking is facilitated when one observes that the distinction between the "ordinary" and the "extraordinary" use of roads

9. See the address of H. I. Swift of the Casualty Information Clearing House of Chicago, report of the 1927 meeting of the National Association of Railroad and Utilities Commissioners, pp. 234 ff.

1. Clark *v.* Poor, 274 U. S. 554.

largely disappears when examined realistically. The difference between the carriage of goods by a common or contract carrier and their carriage in the truck of shipper or consignee consists, not in the fact that one is "business" or "for gain" while the other is something else, but simply in the greater or less degree to which transportation is a specialized undertaking — in the manner, that is, in which an identical function is performed. Likewise, when the private automobile is, in large measure, a business adjunct, and is employed by persons with purposes similar to those of bus patrons, the functional difference is slight. House building would not cease to be an economic function if all men built their own houses. Nor does the use of automobiles for pleasure introduce any qualifying element. What is true of houses is true also of amusement facilities. Improved public highways are means of transportation, and the organization of transportation over them in the most effective manner possible endows them with their proper and natural character.[2]

As a charge based upon the properly apportioned cost of providing and maintaining improved highways, the motor-carrier tax is securely grounded. As such, it rests upon the same basis as the license fees and fuel taxes paid by all motor vehicles.[3] The principle involved having been generally accepted, the problem is merely that of applying it in a scientific manner. This problem, and the defects of existing laws, cannot be discussed here. With regard to motor-carrier operation, it is

2. A real basis can be found for the legal attitude regarding the use of roads for profit, but it would not bear upon the present question.

3. The word free as applied to public highways means the same as in the phrase "free coinage" — open to all, although perhaps not gratuitously. Use of the special-privilege idea to justify charging motor carriers for road use may spring from the mistaken belief that no charge may be imposed for ordinary use.

sufficient to note that, while the more than average weight of the vehicles used justifies more than average fees, the fees should be no larger on this account than similar vehicles in private service pay. And while motor-carrier vehicles should also pay more because of the larger mileages which they usually operate, they should not pay more on this account than private vehicles which run as far. Departure from these principles seems justified only in order to attain necessary simplicity in administration. The force of this contention depends, not upon any idea of justice in the abstract, if such a thing exists, but upon the very practical consideration that if alternative methods of performing a given transportation service are taxed unequally, it is difficult to induce operators to admit that vehicles belong in the taxed category; and, more important, a less economic method of performing the transport service will often be adopted because of the tax.

The point just made implies that charges for road use must be right relatively, as between different classes of vehicles and vehicle uses. But when we consider the argument of the railroads that their highway competitors should not receive a state subsidy, partly at their expense, it appears desirable that highway charges should be right absolutely as well. Sometimes it is suggested that these charges, to be fair, should bear some relation to the fraction of total railway costs incurred in connection with providing rights of way, rails, and so on; but this idea is again the offspring of a penchant for unprofitable analogy. The problem is wholly that of a proper imputation of highway costs. To repeat, it is unnecessary for the present purpose either to formulate a theory of assessing such charges or to criticize existing laws, which, from this point of view, are indeed very vulnerable. It is to be said that

in some of the states there is no basis for the complaint that motor carriers are being subsidized.[4]

The conclusion appears justified, with the possibility of only very minor qualifications, that the "extraordinary" use of public roads as a place of business provides no reason for any phase of regulation not warranted on other grounds, and that the very extensive use made of the idea serves mainly to confuse and mislead. Necessary regulation of traffic and charges for road use rest upon bases which make them indiscriminately applicable to all motor vehicles, and considerations of convenience and necessity rest wholly on transportation grounds. The sole use of the special-privilege idea would seem to be in getting legislation past the gauntlet of the courts, when legal obstacles appear in the way of measures desirable on other grounds. This might be the case if certification of non-common-carrier vehicles were attempted.

Conclusion

The points here discussed have not been selected with a view to achieving a complete or well-rounded analysis of motor-transport regulation within the scope of this article. Stress has been placed on what seem to be the oversights and ambiguities manifest in current regulation and in theories regarding it which appear to be crystallizing. One may accept without question the more general ideas behind motor-carrier control, namely, that wholly unrestricted competition in certain phases of the industry has some undesirable features, and that the relation of motor and rail car-

4. This position is taken by T. H. MacDonald, Chief of the Bureau of Public Roads, in a much-quoted article entitled "Commercial Vehicles on Free Highways." See The Journal of Land and Public Utility Economics, October, 1925. Mr. MacDonald's conclusion, while doubtless correct, is independent of a part of his supporting argument.

riers requires a certain amount of authoritative adjustment. But the translation of these general ideas into more concrete terms tends to become distorted through undue preoccupation with the heritage of theories and legal concepts derived from our experience with the railways and other utilities, and with rationalizations of the public interest emanating from prejudiced sources. The obvious starting point should be a clear-eyed examination of motor transportation as it is, and of the requirements of its further development. What may seem to be the dilatory behavior of Congress in providing regulation over interstate motor carriers may be construed as evidence of appreciation of the need of such analysis. While clearly marked tendencies suggest in a general way the place which motor transportation will probably assume in the transportation scheme, its final position is by no means certain. In so far as public control is made a factor in the situation, a nice balance must be maintained between the requirements of stability and of progress. With regulation undertaken early in the life of the industry, it is more important than otherwise to recognize and evaluate justly the various elements in the situation.

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MONEY, TRADE, AND PRICES — A TEST OF CAUSAL PRIMACY

SUMMARY

Equation of exchange restated, 649. — Working's theory of the isolation of cyclical variations in money and prices, 649. — Mitchell's theory of the primacy of the pecuniary volume of trade, 650. — Cycles of P and M, 652. — And of T and V, 654. — Working's two basic propositions examined, 656. — Seasonals of T, M, and V, 657. — Seasonals of PT plus R and MV, 659. — Cycles of PT plus R and MV, 661. — Bearing of these comparisons on Mitchell's hypothesis, 663. — Conclusions, 664.

THE relation between changes in the quantity of currency in circulation and general rises or falls of prices is, as Fisher's equation of exchange makes clear, complicated by fluctuations in the rate of circulation or velocity of currency and in the physical volume of trade. Many hypotheses which attempt to state the relation between currency and prices have been formulated in terms of Fisher's equation in order to take account of these complications. Among them, two important conflicting hypotheses have been selected for study here. The present paper [1] aims to test these two hypotheses empirically, using for the purpose the results of a statistical inquiry published elsewhere.[2] It is hoped that the tests will throw valuable light on the fundamental question — the relations of currency, velocity, trade, and prices.

1. The writer is indebted to the Robert Brookings Graduate School of Economics and Government, the University of Wisconsin Experimental College, and the Heckscher Research Fund of Cornell University for financial assistance in the statistical work on this paper.

2. Monthly indices for the principal items in the equation of exchange for the United States from 1919 to 1927 were presented in the Journal of the American Statistical Association, June, 1929.

The limitations of the available information have required certain modifications in the equation as formulated by Fisher. The new form of the equation is $MV = k(PT + R)$. MV and M′V′ of Fisher's equation (cash and check payments) have been combined, because it is not possible to separate payments by check and cash withdrawn from banks (which reflects cash payments) in the data now existing. M (cash and checking accounts) = Fisher's M + M′, while V (velocity) is a species of average of his V and V′. k is an arbitrary constant and equals one, when both MV and (PT + R) are expressed as relatives to 1919 as 100 per cent. R represents obligations incurred to make money payments which cannot be conveniently expressed as "p" × "t" (price × volume of trade). R includes interest, dividend, and tax payments, etc. MV, T, and R all represent volumes per working day per month.

Neglecting R for the moment, we may say that the relations between P (conceived as an average of prices) and M are complicated by V and T. Fisher sought to eliminate these complications [3] by resort to a concept of normal value for the complicating factors. Since he does not define "normal" empirically, his theory of the causal primacy of M does not seem to be an hypothesis capable of statistical test.

Perhaps the most plausible empirical argument for the causal primacy of M is that advanced by Holbrook Working. He holds that for purposes of the business cycle the average of the prices charged during any month, P, is a passive factor. Cyclical fluctuations in P are caused chiefly by changes in the quantity of currency, M, in circulation during that or preceding months.

3. Also that of the ratio of M to gold in monetary uses.

> Changes in the [physical] volume of transactions between periods of prosperity and periods of depression are approximately provided for by changes in the velocity of circulation. . . . Changes in the volume [of currency] . . . act upon the price level . . . without substantial interference from the changing physical volume of transactions.[4]

W. C. Mitchell has taken an opposite position. According to his view, the relation between changes in P as an average of prices, and changes in the quantity of currency in circulation, M, is considered in connection with changes in the volume of trade, T, and changes in velocity, V.

> Most of the time, P and T are the "active factors" in the equation of exchange. . . . Modern monetary and banking systems provide a considerable measure of elasticity. . . . But when the pecuniary volume of trade [i.e. PT + R] has reached limits which tax MV . . . monetary and banking factors assume the "active" role, and force a reduction in PT.[5]

The first of these writers would break the equation of exchange up into two parts for cyclical purposes, and consider P as a function of M in isolation from T and V; the second would consider the equation as a whole. The first finds the causal primacy with M, for cyclical purposes; the second regards P and T as "active factors" most of the time — for seasonal and cyclical purposes. It would seem that both of these hypotheses cannot be correct *in toto*. At least one of them requires modification. Can we find help in this issue in economic theory by having recourse to the facts?

In selecting these hypotheses for test it is not intended to imply that they exhaust the possibilities of the situation. They have been selected partly as rep-

4. H. Working, Review of Economic Statistics, viii, 131. Working says "volume of bank credit" instead of volume of currency; but his statistical data on this factor are demand deposits, and he treats deposits as the proximately causal factor.

5. W. C. Mitchell, Business Cycles (1927), p. 137. Mitchell's statement does not include R as a separate item.

resenting opposed views regarding causal priority within the equation, partly as conforming to that important canon for scientific hypotheses that they should be so formulated as to be capable of empirical test. It remains possible of course that, whatever appears regarding questions of causal priority as between the MV and PT sides of the equation, both sides may be "caused" by some condition antecedent to both. Moreover, neither of the hypotheses has direct reference to trends; only the shorter-time movements are included. It must be admitted, to be sure, that something of a problem may be raised for one who would find a causal sequence for trends contrary to that which appears to hold for shorter-time fluctuations.[6]

Working, in support of his hypothesis which deals with M and P in isolation and regards M as causal for cyclical movements, makes two important points. (1) The cyclical fluctuations of T and V are very similar and practically offset one another, and (2) the cyclical

6. Mitchell suggests a possible reconciliation of his view of the causal primacy of P and T for short-time movements with the proposition that the annual output of gold has "a dominant influence upon the secular trends of wholesale prices, and seemingly some influence upon . . . trade."—Op. cit., p. 138. He assumes that "over long periods of time, prices and the physical volume of trade have tended to expand up to" the limits which the gold supply imposes on MV. It may well be doubted whether the downward trend of wholesale prices during the mechanical changes and geographical expansion of the nineteenth century accords with such a view. Moreover, it is difficult to hold that for the problem of long-period relations "the proposition 'other things being equal, prices vary as the quantity of money in circulation' is both valid and important," and at the same time give due emphasis to V and T as complicating factors. And it is a fair question whether the trend of the pecuniary volume of transactions, PT + R, may not have been a significant factor in changes in our monetary and banking systems. Was the decline in P in the nineteenth century connected with the fact that during this period silver was ceasing to be a part of the supply of the standard money metal in important countries? Or were the damping effects on business of the inelastic MV in the United States, 1909–1913, an "active factor" in promoting the agitation for banking reform which led to the establishment of the Federal Reserve system, with its lower reserve requirements?

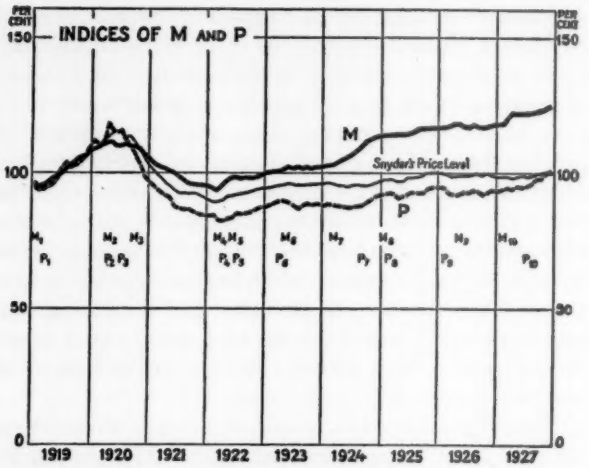


CHART I: 1919 = 100%. The seasonal variation has been eliminated from M, but not from P or Snyder's price level. Comparable turning points in M and P are indicated by paired letters (M_a and P_a) with identical subscripts. Each such letter is placed vertically under the point to which it refers.

fluctuations of P tend on the whole to lag behind those of M. The relation between T and V will be considered presently. The second point, regarding the lag of P behind M, has not been fully tested. The P used by Working was wholesale prices, and the M did not include hand-to-hand cash. For the recent period, which is the only period for which monthly data are available, net demand deposits were not corrected by Working to agree with demand deposits at dates of call.[7]

The chart shows M (with the seasonal variation eliminated) and the index of P (the seasonal of which is almost negligible). Snyder's index of the price level is the light line. The curves differ in trend, but the difference is not sufficient greatly to affect the comparison.

7. For this important correction see Journal of American Statistical Association, (June 1929), p. 112.

Apparently comparable turning points in the two curves M and P are indicated by paired letters placed vertically under the turning points. At (1) M apparently leads by two months. At (3) P clearly starts downward first — even Snyder's index leads M here. M first reaches a low point slightly ahead of P at (4) and a minor peak at (5). P declines at (6) in 1923 before the growth of M is checked. M is clearly ahead again at (7), and perhaps also at (8). In 1925 and 1926 the corresponding points are difficult to identify, but P appears to start downward ahead of M at (9). At (10) M is definitely in the lead. On the whole, M appears to lead a little more frequently than P, but the time-relationship is far from uniform.

The correlation coefficient confirms this variability of lag. In order to eliminate the minor month-to-month fluctuations the three-month moving averages have been compared. The correlations are between the monthly first differences of these three-month moving averages in order to isolate the cyclical fluctuations from the trend. The highest coefficient is for synchronous variation, .651. With M lagged one month, the coefficient is .628. With P lagged one month, it is .637; and two months, .631. The slightly skewed distribution about the peak figure .651 suggests a tendency for M to lead more frequently than P.

This method calls for a word of comment, for it differs from that employed by Working. He correlates P, not with M, but with M multiplied by a trend-correction factor designed to make the trends of P and M comparable. Correction for trend always involves an arbitrary element in the selection of trend, and one can never be certain how far the results are due to that arbitrary element. It has seemed better, therefore, to use the method of first differences, in order to stick as

closely as possible to the original data. On this basis the results appear to favor the view that while P may lag slightly more frequently than M, the lag is far from uniform. The occurrence of definite lags of M behind P is not easy to reconcile with the view that cyclical variations in M cause cyclical variations in P as a general rule.

Let us consider next the relations between T and V. According to Working's hypothesis, cyclical changes in T are approximately offset by cyclical changes in V, so that M acts upon P without substantial interference from T and V. If the equation of exchange were strictly true, this would mean approximately equal amplitudes for each pair of oscillations, and perhaps a lead of T over V to offset the lead of M over P, where that occurs. Do the indices bear out this hypothesis?

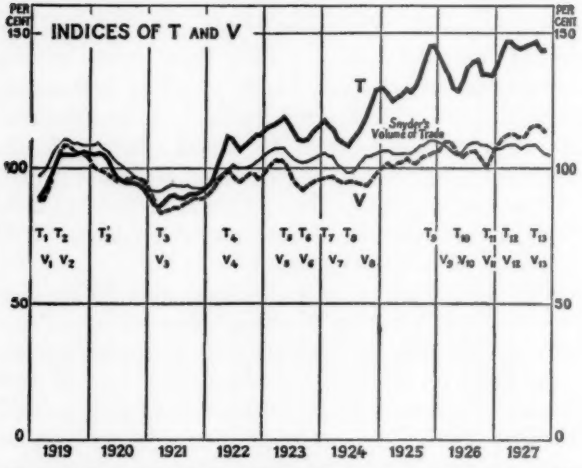


CHART II: For T and V, 1919 = 100%. These indices are expressed per working day. For Snyder's index for the volume of trade "normal" equals 100%. The seasonal variation has been eliminated from each index and a three-month moving average computed. Comparable turning points in T and V are indicated by paired letters (T_p and V_p) with identical subscripts. Each such letter is placed vertically under the point to which it refers.

Chart II shows the indices of T and V and Snyder's index of trade. In each case the seasonal variation has been eliminated and a three-month moving average calculated. There is a slight lead in T at (1). At (2) V drops off definitely in advance of T and Snyder's index,[8] the two latter remaining on a level for more than half a year (T_2 to T'_2). Late in 1920 V rises to a minor peak, a movement only imperfectly reflected in T. At (3) and (4) they are approximately synchronous, tho the upward movement in T is considerably sharper than that in V in 1922. In the latter part of 1922 there is a more marked decline in V, and V reaches a peak slightly ahead of T at (5). They are together at (6) but at (7) T appears to lead and at (8) and (9) is definitely ahead. There is little difference in timing in 1926–27, but the first 1926 valley in T is deeper, while the second 1926 valley in V is deeper. The amplitudes of oscillation of T are considerably greater than those of V in 1924–26, while Snyder's index is perhaps slightly more stable than V in these years. But both T and Snyder's index show drops in 1924 and 1925 which are not very clearly reflected in V. It is significant that the discrepancy in 1920 between T and V may be partly accounted for by the divergent movements of P and M in this year. While the movements of the two curves are on the whole similar, with T leading rather more frequently than V, the differences of movement in T and V are too important to be overlooked.

The correlation coefficients, calculated as before, between the first differences of the three-month moving averages (ex-seasonal), are consistent with these conclusions:

8. In comparing Snyder's index with the writer's, it should be borne in mind that the trend has been eliminated from Snyder's index.

V leads one month	.310
Synchronous	.609
V lags one month	.477
V lags two months	.217

Even the highest coefficient indicates a relation between the cycles of V and T that is far from close. There is, indeed, a general similarity of the cyclical variations of T and V, but it is hardly so great as to warrant the conclusion that M acts on P without substantial interference from T and V. The more rapid decline of the correlation coefficient on the one side of this peak figure .609 than the other, suggests a possible tendency for T to lead V more frequently than for V to lead T.

Working's hypothesis involves two further points which must be clearly recognized. (1) The argument that T and V neutralize each other so that M acts upon P, so far as cyclical fluctuations are concerned, without much interference, neglects the large volume of transactions represented by R.[9] It assumes that cyclical variations of PT + R are similar to those of PT, so that we may write $MV = hPT$ (where $h = k\left(\frac{(PT + R)_{1919}}{PT_{1919}}\right)$). That this is probably not the case, a comparison of the annual averages of the indices of PT and PT + R may serve to show:

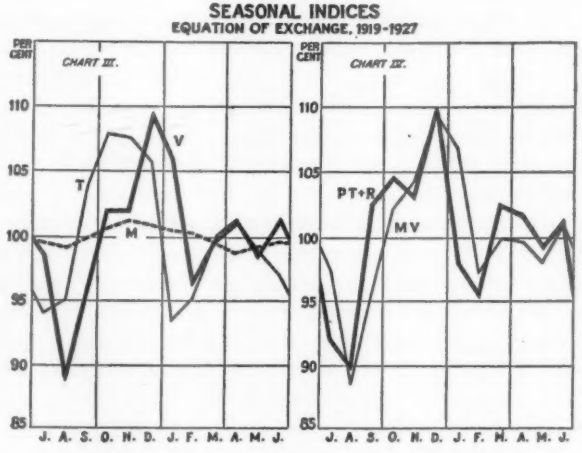
	1919	1920	1921	1922	1923	1924	1925	1926	1927
PT	100	108	78	88	99	100	118	123	135
PT + R	100	103	78	88	96	97	115	119	134

(2) But even granting that $MV = hPT$ approximately, it follows mathematically from the equation that a consistent cyclical lead of M over P means not only a lead of T over V but also that there is a cycle in the quantity $\frac{T}{V}$ which leads the cycle in M, so that the order of leads would be $\frac{T}{V}$, M, P. Such a lead is not easy to reconcile

9. R may be nearly half as great as PT. Cf. Journal American Statistical Association, p. 114.

with the view that M acts on P without substantial interference from T and V. Since M does not lead P consistently in 1919–27 this view is not clearly confirmed in the empirical data at hand.

Working's hypothesis refers exclusively to cyclical fluctuations. But it will be remembered that the issue between the two hypotheses was the general one whether the causal primacy lay chiefly with the PT side of the equation or with the MV side. Our economic system is an organic whole, and it would not be easy to show how the PT side could be causal for purposes of seasonal movements, and the MV side causal for purposes of cyclical fluctuations. In any event the second hypothesis, that of Mitchell, is of broader application, including both seasonal and cyclical movements. The seasonal of P is almost negligible. Chart III shows seasonal indices



for T, V, and M. (These seasonals were computed by the link-relative method.) The first month plotted is

July, so as not to break the year in mid-winter. There is a distinct lag of V behind T in the winter months. In the spring and summer the monthly movements are partly synchronous. While the variation of M is considerably smaller than the variations of T and V, it shows an even more unmistakable lag behind T. All this is quite consistent with the second hypothesis — that the PT side of the equation is causal most of the time. But it raises a very important question. If the seasonal of P is small, and if the seasonal of T leads those of both M and V, PT clearly leads MV in seasonal movement. Will R account for this discrepancy, or is the equation not precisely true, even when R is included? Does PT *plus* R lead MV?

Before discussing the index of PT + R it may be well to note the times to which the constituent series have reference. For the most part P refers to current market prices, i.e. to prices at the time when they are fixed by contract. T refers, so far as the data permit, to the time of delivery or passing of title. One of the R series refers to the date when these obligations are contracted, but for practical reasons it has been necessary to include the other series as of the dates when these obligations are discharged. Thus for the most part the PT + R index refers to the date of legal fixation of obligations to make money payments. While practical considerations have been predominant in determining the dating of the constituent series, there is a strong theoretical reason for preferring that each constituent series should have reference to the date of legal fixation. We are concerned to investigate causal sequences — and therefore we need to record each "p," "t," and "r" so far as possible at the time of legal fixation, not at any subsequent date. Only so can we hope to identify time lags and leads which are significant of causal priority.

Moreover, scientific theory presumably requires a practical reference. Most people are concerned about P as a measure of currently charged prices. What they understand by "the price level" is something which is in that sense capable of approximate measurement; to define P as having reference to actual settlement dates would make it impossible of measurement and remove assertions about the causal relations of M and P from the realm of practical significance.

In support of his hypothesis Mitchell says, "The three quantities represented in the equation of exchange as simultaneous — payments, prices and physical volume of trade — are in fact three stages through which business transactions pass in time"—first, prices, "p's"; second, deliveries, "t's"; and third, money payments, MV. MV lags behind PT + R. On a yearly basis the equation of exchange deals with approximately simultaneous quantities; on a monthly basis it does not.[1] Do the indices of MV and PT + R support this contention?

Let us consider first the seasonal variations, as shown on Chart IV. For a part of the year (July is the first month plotted) the monthly fluctuations of MV and PT + R are approximately synchronous. A part of the discrepancy in the equation which appeared when we neglected R and considered the seasonals of T, V, M, and P, has disappeared. But during the winter months there appears to be a definite lag of the discharge of obligations behind their contraction. Obligations incurred in September, October, November, and December are apparently discharged chiefly in December and

1. It is important to bear in mind that if "t" refers frequently to a later date than "p," the equation could not be made true by adding to MV increases in accounts receivable each month, even if such information were available. The differences in timing of "p" and "t" would make PT + R equal neither to cash receipts nor to receipts from cash sales plus additions to receivables.

January. This is precisely what we should expect on the basis of Mitchell's hypothesis — a consistent lag of MV behind PT + R, altho the lag may at times be less than one month and so might appear in monthly

SEASONAL INDICES

EQUATION OF EXCHANGE 1919–27

	M	V	MV	P	T	PT	PT+R
J.....	101	106	107	101	94	94	98
F	100	96	97	101	95	96	95
M.....	100	100	100	100	100	100	102
A.....	99	101	100	99	101	100	102
M.....	99	99	98	100	99	99	99
J.....	100	101	101	99	97	97	101
J.....	99	99	97	99	94	93	92
A.....	99	89	89	99	95	95	90
S	100	96	96	100	104	104	102
O.....	101	102	102	100	108	108	104
N	101	102	104	100	108	107	103
D	101	109	109	101	106	107	110

indices as synchronous variation. The seasonal indices are consistent with the view that money work is largely contracted for in advance of its performance.

It is to be noted that it is well within the range of possibility that the shape of the PT + R seasonal would be significantly altered by more complete information. The monthly data available for the period 1919–27 include considerably less than one third of the dollar volume of transactions. Information about R is particularly incomplete — probably less than one sixth of the total R is represented. Much the largest single omitted item is apparently brokers' loans paid off (particularly day-loans), and another omitted item of considerable size — perhaps the second largest — is over-the-counter sales of bonds.

In view of these great gaps in our information it may be argued that complete data would bring the

PT + R seasonal into agreement with the seasonal of MV. Neither of the omitted items just mentioned seems likely to have precisely this effect on the PT + R seasonal. Commercial loans might well have a tendency in this direction, but alone they would probably be insufficient to bring about a complete agreement. Moreover, if one seeks to discredit the evidence for a lag of MV behind PT + R, which the available information yields, by resort to a consideration of the possibilities of more complete information, there is an important factor working in the other direction. A number of the items included in the PT + R index refer, not to the time at which obligations to perform money work are incurred, but to the time at which they are discharged. Logically we should include taxes, interest, and insurance premiums, not to mention time loans paid off, at the date when these obligations are incurred, not at the date when they are discharged, if they are properly to be put on the PT + R side of the equation, as analogous to the obligations to pay incurred by physical volume of sales × prices.

But the ultimate verdict of complete information is beyond our immediate interest. So far as present information goes, the seasonal variation of PT + R shows a lead over MV which is consistent with the view that k (PT + R) does not equal MV on a monthly basis, and consistent also with Mitchell's hypothesis, that most of the time PT + R is the active side of the equation, tho it may occasionally be limited when MV is stretched as far as the elasticity of our monetary and banking system permits.

What, then, do the cycles of PT + R and MV show? On the basis of the first hypothesis, which deals with M and P in isolation and attributes causal primacy chiefly to M, we should expect PT + R to equal MV, or at any

rate that MV should not lag behind. On the basis of the second hypothesis, we should not expect precise equality of MV and PT + R. We should not expect PT + R to lag either on the upward or downward swings. We should expect occasional lags of MV behind PT + R. Further, since a part of PT + R is synchronous with MV and a part is lagging, we should also expect MV to be a smoother curve; or else that a dip in PT + R might give rise to a shallower, more prolonged dip in MV, or possibly to two successive shallow dips. Similarly, we might expect a peak in MV to be flatter than one in PT + R, or doubled. With which of these hypotheses do the facts agree?

It is clear that our available information does not accord very closely with the first hypothesis. (See

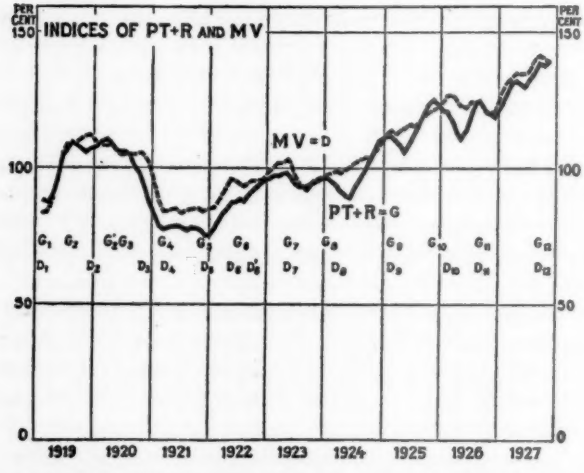


CHART V: These indices represent dollar volumes per working day. The seasonal variation has been eliminated and three-month moving averages computed. Comparable turning points in MV (or D, which represents the money or dollar side of the equation) and PT + R (or G, which represents the goods side of the equation) are indicated by paired letters (D_x and G_x). Each such letter is placed vertically under the point to which it refers.

Chart V.) It appears that k times the index of (PT + R) does not precisely equal MV, and there are important lags of MV behind PT + R. On the other hand, the indices do not entirely accord with Mitchell's hypothesis. MV apparently leads slightly at (1). While the delayed peak in MV at (2) is what we should expect on this view, G'_2 is clearly open to a conflicting interpretation. The marked lead of PT + R in the decline at (3) is consistent with the second hypothesis; and MV might have been expected to drop less than PT + R in 1921, tho it would seem that the two curves should drift closer together between (4) and (5). While MV apparently leads in the minor peaks at (6), the peak is apparently doubled in the MV curve (D_6 and D'_6). The slumps in 1924 and 1925 in PT + R are less clearly reflected in MV than might have been predicted on the second hypothesis, but the slight dips or checks in MV in each year are doubles. At (10) PT + R is clearly in the lead. The shallower second dip in PT + R in 1926 and deeper second dip in MV are also in agreement with Mitchell's view. There are several points at which there are slight discrepancies with this hypothesis, but on the whole, the agreement with the second hypothesis is far better than with the first, and is probably as great as could fairly be expected in the present state of our information.

Before drawing general conclusions from this statistical analysis it should be noted that there are three important qualifications to which conclusions based on the material here considered are subject. (*a*) They are limited to 1919–27 and to this country; even tho the analysis which has been employed here may prove useful elsewhere, and may have disclosed relations which must be reckoned with in dealing with other times and countries. (*b*) Because of the incompleteness of

our information, the conclusions are necessarily tentative. (*c*) They have reference primarily to seasonal and cyclical movements. Subject to these qualifications the following conclusions based on the analysis of this nine-year period are offered.

(1) It is possible to state the equation of exchange in such a form that it will be true by definition. But in this form it is practically useless as a means of studying the relation between currency, velocity, trade, and prices. But if the equation of exchange is stated as $MV = kPT$, where MV and PT are empirically determinable magnitudes and where P refers to market prices and T to deliveries, it is hardly too much to say that the equation is measurably false in two [2] important respects:

(*a*) It omits a very large volume of transactions, R, — interest, dividend and tax payments, etc. Both the seasonal and cyclical fluctuations of PT + R appear to differ significantly from those of PT. R is a factor which complicates the problem of relating P and M quite as truly as T and V, and its effects are too important to be overlooked. We cannot assume that $P = \frac{MV}{T}$. The equation should be written $MV = k(PT + R)$.[3] (*b*) The equation of exchange, even when R is included, is probably not precisely true on a monthly basis. On the whole the indices of MV and PT + R are fairly consistent with the view that P, T, and MV do not refer to the same dates — that a part of PT + R leads MV appreciably in some of the

2. There are other qualifications which may be added: transactions settled by offset and defaulted liabilities falling due need to be subtracted from PT + R. The first is difficult to measure; the second is of negligible importance in the total.

3. Where $k = 1$, it may be more convenient to write the equation for some purposes $MV - R = PT$. But this does not make R any less a complicating factor in the relation of M to P.

seasonal and some of the cyclical movements, while another part of PT + R is approximately synchronous.

(2) Working's hypothesis appears difficult to reconcile with the facts. It does not take account of R as a complicating factor. P sometimes appears to lead M. And the cyclical movements of T and V do not entirely offset each other; even for cyclical movements it is dangerous to break up the equation so as to treat M and P in isolation. The indices based on existing information would have to be grossly in error, if this hypothesis were true. Moreover, it is open to the theoretical objection that, even if R, T, and V could be neglected for cyclical purposes, so that M acts on P without substantial interference, we should have to assume a cyclical lead of T/V with respect to M in order to account for a consistent cyclical lead of M with respect to P.

Incidentally it may be noted that in dealing with the problem of measuring the items in the equation of exchange empirically, there were disclosed two further difficulties in breaking up the equation so as to find a direct relation between currency and prices.[4] MV and PT + R constitute two separately and independently measurable magnitudes. But on the basis of Fisher's ideal formula, P and T cannot be measured independently of each other or of an index of PT. Again the distinction between deposit currency (which is most of M) on the one hand, and time deposits and other very liquid assets such as securities and loans on call, on the other hand, is arbitrary. Moreover, business practice with regard to these different forms of "cash" has been undergoing considerable change of late. Any index of M in recent years contains an arbitrary trend. Neither M nor P is a clearly definable, independent empirical quantity. In the case of P the objection can perhaps

4. See Journal American Statistical Association, as cited, p. 113 and p. 116.

be set aside — in the case of M it clearly cannot be neglected.

(3) The second hypothesis states that most of the time PT + R, obligations incurred to make money payments, are causally prior to MV, the fulfillment of those obligations, and that MV is elastic and passive except when stretched to the limit. According to this theory we should expect the monthly index of PT + R either to lead that of MV, or possibly (where the actual lead is a fraction of a month) to be synchronous with MV. The typical seasonal variations of MV and PT + R are in agreement with this theory. And while there are in the cyclical movements some appreciable discrepancies with the theory, the agreement is probably as good here as could fairly be expected from the rough data available. Present information about the movements of money, velocity, and the dollar volume of transactions is more nearly consonant with the second hypothesis, which attributes causal priority most of the time to the dollar volume of transactions.

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SOME ASPECTS OF THE STABLE MONEY QUESTION

SUMMARY

The wide interest in the problem of stable money, 667. — Assumptions of the stable money advocates open to doubt, 668. — I. A real standard of value and social justice, 668. — Effect on (*a*) the creditor, 669, (*b*) the laborer, 670, and (*c*) the entrepreneur, 670. — Ease of attainment, 671. — II. Relation between a stable price level and business stability, 672. — Secular trend important in relation to business activity, 678. — Reasons for supporting a stable price level, 679. — III. The use of a price index as a criterion of currency control objectionable, 680. — An alternative method proposed, 681. — Advantage of the proposed plan, 683. — IV. Complexities surrounding stabilization plans, 691. — Reasons for insistence on change from the gold standard, 691. — Gold standard should not be abolished, 693. — Conclusion, 694.

It is natural that, in a period of readjustment following a great war, the question of monetary stability should occupy an unusually prominent place in current economic literature. In this country the interest which the question has aroused has been evidenced by the founding of The Stable Money Association, which numbers among its officers, members, and adherents an imposing assemblage of prominent economists, bankers, lawyers, and business men. The stable money movement, as sponsored by the Association, is a movement designed to secure stability in the value of the dollar, the criterion of such value being an index number of the price level.

The strength of the stable money movement lies in the breadth of its appeal. It espouses the cause of social justice. If we are to believe the statement of the Association's bulletin,[1]

1. Volume i, No. 1, Foreword.

There is probably no defect in the world's economic organization more serious than the fact that our most common unit of value is a fixed weight of one commodity having a widely varying value. The resultant monetary instability brings in its train many serious economic and social results. The changing purchasing power of the dollar blindly robs one class of persons to the extent of billions of dollars within a few years, only to give them to another class, which class is in turn robbed as time brings other changes in the value of the dollar.

It is this deplorable state of injustice which the stable money movement purposes to rectify. But this is not all. It is claimed also that a stabilized price level will to a large extent eliminate business instability. The requirements of justice and of business, so far as money is concerned, are, then, conceived to be identical. The hypothesis is open to serious doubt, and it is the purpose of the present paper to deal with fundamental aspects of the stable money question bearing on it.

I

If money is properly to perform the function of a real standard of value and, consequently, to prevent that social injustice which accompanies a fluctuating standard, the absolute, not the relative value of the monetary unit must be kept stable, to the end that changes in the values of goods in general — the changes which unquestionably take place when the per capita productivity of a country is increasing or decreasing — may be accurately measured and the real economic situation properly depicted. If population were constant, such a result could be approximated by keeping the quantity of monetary media constant and allowing the commodity price level to vary inversely as the productive power of the country. If population were increasing, however, it would be necessary to add to the quantity of money in proportion to the increase in population in order to

secure the desired result. In the latter case, the price level would tend to fall if the productive efficiency of the country were increasing more rapidly than population, and to rise if productive power were either increasing less rapidly than population or actually decreasing. That such a standard of value would produce more equitable results than one with stable purchasing power has been clearly shown by a number of economists. But this point seems to have been entirely overlooked by the current stabilizers; a fact which makes it worth while to present a brief summary of the supporting argument.[2]

Consider first the case of long-time creditors and other recipients of fixed money incomes. When the productive power of the country is increasing more rapidly than its population, a falling price level permits the members of this group to share with others in the increased economic product by increasing the purchasing power of their money incomes. Far from gaining unjustifiably at the expense of other economic groups, they are merely receiving their equitable share in the general increase in economic goods, an increase which their capital assuredly helped to bring about. Conversely, when the productive power of a country is on the wane a rising price level is necessary, from the standpoint of justice, in order that the recipients of fixed incomes shall suffer with the rest in proportion to the decrease in productivity, rather than benefiting at the

2. Professor Edgeworth in England and Professor Taussig in the United States pointed out the chief facts in this connection in earlier discussions of bimetallism in the nineties. More recently, Mr. D. H. Robertson has summarized the arguments in support of a regulation of the currency such as that suggested in the text in his Money, 1922. Among current stabilization suggestions, Dr. Maurice Leven's proposal to stabilize an index of average wages is the nearest approach to this plan that I have seen, but it is more complicated practically as well as theoretically less satisfactory. See Proceedings, American Statistical Association (March, 1928), pp. 146–147.

expense of the rest of the community as they would do under a stable price level.

Turning next to the labor group, the situation is essentially similar. Wages, it is true, are not fixed, but neither are they readily adjustable to changing conditions because of the sluggishness of the labor market. A falling price level during periods of increasing productive efficiency, by augmenting the real income of the laborers, would permit labor to share in the increased product of the community without the necessity of striking — perhaps unsuccessfully — for higher money wages. In periods of decreasing productivity, on the other hand, it is certainly not unjust to the laborers if they are compelled to suffer a decreased real income together with the rest of the community.

Finally, the case of the entrepreneur should receive brief attention. Entrepreneurs are debtors, as a group, and it is claimed that they will suffer from a falling price level — even when the fall in prices results from increased productive efficiency — because they will have to pay their creditors increased quantities of commodities. "But," as Professor Edgeworth has pointed out, "if the production of commodities per head has increased since the debts were contracted, then the average entrepreneur, though he may have to pay his creditors more commodities, will have more commodities out of which to make that payment." [3] The converse of this statement, on the other hand, would indicate the justification for a rising price level, as far as the entrepreneur is concerned, when the productive power of the country is on the decrease.

A standard of value, the purchasing power of which varies inversely as productivity, has still another ad-

directly?

3. Papers Relating to Political Economy, 1925, i, 428. Professor Edgeworth follows this statement with a convincing demonstration of its soundness.

vantage. Besides advancing the cause of justice in the manner indicated in the preceding paragraphs, it is relatively easy of attainment. It is a much more simple matter, if conscious regulation of the currency is to be attempted, to adjust the quantity of money to the growth of population than to stabilize the movements of a commodity price index through manipulation of the monetary supply. The population growth of any country can be forecast with a high degree of accuracy,[4] so that the proper adjustment of the monetary stock to increases in population could be made with a minimum of difficulty.

In view of the foregoing evidence, it is difficult not to agree with Robertson [5] that "from the standpoint of social justice and harmony — even from the standpoint of theoretical simplicity of working — we should be strongly inclined to accept this solution [to the problem of the standard of value]. And even if we decide on other grounds that the price level should normally be kept stable, we shall probably admit that either an exception ought to be made, or else that money contracts ought to be subject to drastic revision, in the event of any exceptional alteration in human productivity." There may be, as Robertson suggests, other grounds on which we should decide in favor of a stable price level. It may also be true that a stable price level would, in the past, have achieved somewhat greater justice than the varying level of gold prices. But to base the appeal for a stable price level primarily on the grounds of justice, as the Stable Money Association has done, shows, to say the least, a clear lack of discernment as to the nature of the fundamental factors involved in the question of stable money.

4. See the evidence presented by Dr. Raymond Pearl in his Biology of Population Growth, 1925.

5. Op. cit., p. 122.

II

It has already been indicated that a stable price level may be desired on some other ground than that of social justice. If it can be demonstrated, for example, that business stability will be increased to a marked extent by a stable level of prices, then we may be justified in advocating such a condition in the belief that greater business stability is of sufficient importance to the welfare of the group to permit of some slight impingement on our ideals of justice and equity. We have, then, to examine the relation between stable money and business stability with a view to passing judgment from this point of view on the desirability of a stable price level.

The function of money as a medium of exchange is to facilitate the exchange of goods and services and thus to permit the present highly-specialized economic order to function smoothly and easily. On the face of it, it seems plausible that, if money is to fulfill this function in satisfactory fashion, there should be a direct relation between the amount of money and the production of economic goods. If the amount of wealth increases 40 per cent, say, in a given decade, it seems only logical that the amount of money should increase in approximately the same proportion in order to maintain the smooth working of the economic system. Such procedure would tend to result in a stable commodity price level instead of a price level varying inversely as productive power, and might well be deemed desirable, even tho there be certain inequitable results, because of the beneficial effects it would have on business stability.

A cautious attitude should be adopted, however, in assuming that the proper regulation of the quantity of money and credit will largely eliminate business instability, in so far as the latter is a result of disturbance in

the system of prices. A great deal of disturbance may exist within the system of prices during a period when the movements of the price level itself are of minor significance. This is well illustrated by the following statement, recently published by the Federal Reserve Bank of New York: [6]

> The general level of commodity prices has shown little change since December, but movements of individual commodities have been very erratic. This is a situation which has prevailed for more than a year; during that time, the Bureau of Labor Statistics index has fluctuated within a range of 4 points. . . . Movements in the various commodities have frequently been in opposite directions and have tended to offset each other. In recent weeks, rubber has advanced substantially above the levels that have prevailed since last May, while hides have broken sharply to the lowest prices in nearly two years; wheat and hog prices rose to the highest levels in several months, while cattle prices declined to the lowest levels since the autumn of 1927. . . . Copper has advanced to successive new high levels since 1920; refined sugar has declined to the lowest price since 1922. A composite of these widely varying prices, however, indicates comparatively little change in the general level of commodity prices.

The above excerpt makes it clear that stability within the system of prices is not a necessary result of a stable price level. On the other hand, the recent internal disturbance in the price system might have been much more marked than it was if the price level had fluctuated more violently. What we need, if we are to arrive at a sound conclusion in this connection, is a definite estimate of the relation between changes in the price level and internal price instability. Fortunately, such an estimate is to be found for the wholesale price system in F. C. Mills' exhaustive study, The Behavior of Prices.[7] Dr. Mills' conclusions on this score are as follows: [8]

6. Monthly Review (March, 1929), pp. 22–23.

7. Chapter III. But see also a pertinent criticism of Mills' procedure in the Journal of the American Statistical Association, New Series, No. 163, on The Significance of Fixed-Base and Link Relatives in Studies of Price Instability, by Dorothy C. Bacon, pp. 274–281.

8. Page 369.

An attempt has been made to measure the relationship between instability of the price level and internal instability, the latter being measured by the indexes of dispersion and displacement, in combination. There has been found a tendency for the degree of internal disturbance to vary with changes in the price level, the internal disturbance being greater the greater the change in the price level. (It is the degree of change in the price level, not the direction of change, which appears to be related to internal disturbances.) If we assume that the causal relationship runs from changes in the price level to variations in the degree of internal disturbance, the evidence of the present study indicates that, during the years 1893–1926, approximately 40 per cent of the internal instability of wholesale prices could be attributed to fluctuations in the wholesale price level. The remaining 60 per cent may, on this evidence, be attributed to other causes which would, presumably, continue to operate if there were no changes in the level of prices.

Dr. Mills qualifies his conclusion, however, by warning against placing too great trust in the exact accuracy of the figures given. The relation between changes in the price level and internal price disturbance varies from period to period.[9]

It appears, from a study of the results in detail, that the degree of relationship between changes in the price level and changes in dispersion and displacement is far from constant, and that the differences between periods are even greater than those which the . . . results given above would indicate. During periods of extreme disturbance those monetary and credit changes which are reflected in changing price levels are of dominant importance in determining the degree of internal instability. . . . During periods marked by only minor changes in the price level a very much lower degree of relationship between external and internal changes would be expected. At such times those specific price-making forces which affect the prices of individual commodities are vastly more important in causing shifts in internal relations than are the general factors which touch individual prices only through changes in the purchasing power of the monetary unit. For this reason, the coefficients of correlation and of determination derived from annual data for the period 1891–1926 are probably too low if relations between external and internal changes during periods of extreme price disturbance are in question, too high if interest attaches to the same relations during periods marked by minor changes in the level of prices.

9. Page 364, note

The qualification just noted is significant. In trying to estimate the benefits of a "managed" currency over the gold standard it is important to make the comparison with a period in which the gold standard was functioning in reasonably satisfactory fashion. The pre-war period following 1900 was one of this sort in the United States. The disturbed currency situation of the nineties had been settled with the passage of the Act of March 14, 1900, and from that time on until 1913, the gold standard served the country in as adequate a fashion as well could be expected in view of the then unsatisfactory organization of our banking system. If, then, we confine our attention to this pre-war period, it is clear that we should expect "a very much lower degree of relationship between external and internal changes" than that given for the whole period 1893–1926, which includes the large monetary disturbances incidental to the prosecution of the War. Just how much lower the degree of relationship would be for the years 1900–1912, it is impossible to say without a separate calculation for that period, but it would seem conservative to assume that not more than 20 or 25 per cent of the internal price disturbance of these years could be attributed to changes in the wholesale price level.

The foregoing estimates are designed to show the extent to which internal price disturbances would have been eliminated had the price level been kept absolutely stable during the interval in question. But even the most sanguine of the stable money enthusiasts are forced to admit that relative price stability, i.e. a greater degree of stability than would have appeared otherwise, is the best that can be hoped for through the regulation of the quantity of currency and credit.

Professor Commons, for example, seems to think that the situation which has prevailed in the United States

since 1923 is exemplary of a regulated price level.[1] Since this opinion seems to be fairly representative, it will prove of interest to compare the cyclical fluctuations of the wholesale price level in recent years with those of an earlier period in order to obtain some light on the relative magnitude of such fluctuations under the two sets of conditions. For this purpose it is necessary to eliminate the long-time trend in each period. This has been done by fitting a straight line trend to the Bureau of Labor Statistics wholesale price index figures (annual averages) for the two periods 1900–1912, and 1923–1928, and then reducing the index numbers to percentages of their respective ordinates of trend. The results appear in Tables I and II below.

TABLE I

DEVIATIONS OF B. OF L. S. INDEX FROM LINE OF TREND, 1900–1912

Year	(1) Price Index *	(2) Ordinate of Trend †	(3) Per cent of (1) to (2)	(4) Deviations
1900	80.5	79.7	101.0	1.0
1901	79.3	81.4	97.4	−2.6
1902	84.4	83.0	101.7	1.7
1903	85.5	84.6	101.1	1.1
1904	85.6	86.2	99.3	−0.7
1905	86.2	87.9	98.1	−1.9
1906	88.6	89.5	99.0	−1.0
1907	93.5	91.1	102.6	2.6
1908	90.1	92.8	97.1	−2.9
1909	96.9	94.4	102.6	2.6
1910	100.9	96.0	105.1	5.1
1911	93.0	97.7	95.2	−4.8
1912	99.1	99.3	99.8	−0.2

* 1913 = 100.
† The equation of the line of trend is $y = 89.5 + 1.63x$ for the period 1900–1912 with the origin at July 1, 1906.

1. See his article, Price Stabilization and the Federal Reserve System, reprinted from the Annalist of April 1, 1927, by The Stable Money Association, especially p. 6.

TABLE II

DEVIATIONS OF B. OF L. S. INDEX FROM LINE OF TREND, 1923–1928

Year	(1) Price Index *	(2) Ordinate of Trend †	(3) Per cent of (1) to (2)	(4) Deviations
1923	100.6	101.1	99.5	−0.5
1924	98.1	100.3	97.8	−2.2
1925	103.5	99.6	103.9	3.9
1926	100.0	98.8	101.2	1.2
1927	95.4	98.0	96.6	−3.4
1928	97.6	97.3	100.3	0.3

* 1926 = 100.
† The equation of the line of trend is $y = 99.2 - 0.76x$ for the period 1923–1928 with the origin at January 1, 1926.

The percentage deviations from the respective lines of trend are given in column (4) of each table and indicate the amplitude of the cyclical fluctuations of the wholesale price level in the two periods under consideration. It will be observed that the differences are not striking. In the earlier period, the deviations averaged 2.17 per cent [2] as compared with 1.92 per cent for the period 1923–1928.[3]

The conclusion to be drawn from the preceding comparisons is clear. If the period 1923–1928 may be considered as a sample of what can be done in the way of maintaining a stable price level of commodities at wholesale, it would seem that relatively little can be accomplished in the way of eliminating cyclical fluctua-

2. If the trend of the price level for the period 1900–1912 is obtained by the use of a five-year moving average, the results are not materially different, the average deviation being 2.55 instead of 2.17 as noted above.

3. The writer is well aware that six years is too short a period for the derivation of a satisfactory trend line, but prefers in the present instance to use the same method as that used in the earlier period, especially since the direction of the calculated trend is nearly horizontal. If, following the Harvard Economic Service, the trend is assumed to be neither upward nor downward, the average deviation (from the average) amounts to 2.17 instead of 1.92. The difference in the two results is obviously slight, and essentially the same conclusions would be reached whichever method is used in obtaining a deviation figure for the later period.

tions in the wholesale price level.[4] This conclusion, taken in conjunction with Dr. Mills' estimates already considered, appears to substantiate the view that almost none of the internal instability of the wholesale price system could be eliminated by attempting to stabilize the price level.

But this is not the whole story. While the amplitude of the cyclical fluctuations of the price level about the line of trend differed but little in the two periods treated above, the trend itself was decidedly different during these intervals, rising rather sharply in the period 1900–1912, and falling very slightly from 1923 to 1928. What, if any, is the relation between the trend of the price level and business conditions?

In answer to this question we have the evidence of Dr. Willard Thorp from his study of business annals. Dr. Thorp found that, in England, the number of years of prosperity per year of depression amounted to 1.0, 3.3, and 2.7 in three periods in which the trend of the wholesale price level was upward, as compared with 0.9 and 0.4 in two periods characterized by falling trends; while in the United States, the figures were 2.6, 2.9, and 3.1 with rising trends of the price level, and 0.8 and 0.9 in the periods in which the trend of prices was downward.[5] We may well agree with Dr. Mitchell that "these results are so uniform and so striking as to leave little doubt that the secular trend of the wholesale price level is a factor of great moment in determining

4. The writer does not wish to be considered as agreeing with the notion that the Federal reserve authorities have made a special attempt to stabilize the wholesale commodity price level during the past six years except in so far as attempts to maintain a sound credit structure may have resulted in such stabilization. It does seem probable, however, that the level of prices at wholesale has fluctuated within as narrow an amplitude during this period as could be anticipated from any concerted attempt to stabilize this price level.

5. See W. C. Mitchell, Business Cycles, (New Edition, 1927, pp. 410–411), for a discussion of this relationship.

the characteristics of business cycles. This is no novel conclusion; but Dr. Thorp's data lend it new force and precision." [6]

It appears, then, that if the trend of the wholesale price level can be controlled through currency regulation, it may be possible thereby to exert a considerable influence on business conditions. This does not necessarily imply that greater business stability is the consequence of such regulation; it indicates, rather, that business activity may be affected. There would seem to be little doubt that a rising trend of prices offers a stimulus to business which leads to more extended periods of prosperity, while a downward trend in the price level has a retarding influence by lengthening out those of depression. Since this is the case, it may well be asked whether a gently rising price level is not to be preferred — from the point of view of business activity — to one which either is kept stable or is falling. As a matter of fact, a strong case can be made for a gradual increase in the trend of the wholesale price level. Theoretically, the injustice might be greater than under a stable price level; but the full use of capital plant and lack of unemployment during the longer periods of prosperity might well be deemed sufficient to more than compensate for the injustice that a rising trend of prices would engender. It is quite possible, for example, that the rising price trend of the period 1900–1912 resulted in a more continuous increase in productivity than would have been the case had the trend of the price level remained stable.[7]

Altho the argument for a moderately rising price

6. Ibid., p. 411.

7. The case for a gently rising price level has been defended on the grounds of enhanced business activity by Mr. D. H. Robertson in his Money (1922), pp. 122–125. See also his Banking Policy and the Price Level (1926), p. 26.

level is thus not without its merits, as a practical scheme of regulation it is subject to at least one serious drawback. As long as the chief commercial countries of the world retain some form of the gold standard, it would be necessary either to have a constantly increasing rate of gold production or steadily to expand credit relatively to the amount of gold maintained as a base for such expansion. The first alternative seems, at present, to be out of the question,[8] while the second is likely to prove undesirable if carried as far as a constantly rising price level would soon require. Moreover, there is still another aspect of the case to be considered. In the past, the trend of prices has been either upward or downward, but has not moved horizontally for any protracted period. Consequently, it is not possible to assert categorically that a rising price trend would *necessarily* insure less interrupted business progress than a stable trend. Certainly it would seem, on a priori grounds, that if the quantity of money and credit were properly adjusted to the increase in a country's wealth, there would need be no deadening effect on business activity such as is experienced when the trend of prices is falling, while the result of such an adjustment of monetary media to economic needs would be a commodity price level, the trend of which would tend to be relatively stable.

III

It is thus on the basis of adjusting the quantity of money to economic requirements that a policy of control may be advocated which, if properly carried out, will effect a considerable measure of stabilization in the

8. See, for instance, Mr. Joseph Kitchin's surveys and forecasts of gold production in the Review of Economic Statistics, August, 1921, April, 1924, and July, 1926; also Professor Edie's "An International Viewpoint on Commodity Prices — Long Decline in Prospect," in the Annalist, November 16, 1928.

trend of the price level. But the use of a price index number as the criterion for currency control is, at best, of doubtful expediency. The object of this sort of monetary regulation, as has already been emphasized, is to effect a correlation between the quantity of money and the needs of industry. The price index number shows the result of changes in these two factors in the past. If the adjustment of monetary media to industrial needs has been proper for a considerable period, the resulting price level will be comparatively stable. On the other hand, if the wealth of the country has increased more rapidly than the amount of money, or vice versa, this will be indicated by a fall or rise of the price index. Since it is not the past instability of the price level which is the cause for concern, but rather future stability, the expansion or contraction of the currency by the regulatory body should be based on the needs of the future, not on the maladjustments of the past. In a sense, the regulation of the currency on the sole criterion of an index number of the price level is analogous to the efforts of a physician to cure a fever by administering medicine which will bring the temperature of the patient back to normal, while the proper adjustment of the currency to future needs may be compared to the practice of preventive medicine. To effect a cure is important; to prevent a disorder from occurring is much more important.

In order to adjust the supply of currency to future needs, it is necessary to resort to forecasting. In the present state of statistical development, such a procedure is subject to distinct limitations, but, in view of the considerable lack of agreement among experts as to the type of index number that should be employed as a criterion of price control, it may be hazarded that the limitations on the process of forecasting — of the type

that would be necessary for currency regulation — are not much greater than those surrounding the use of a price index. To forecast the general tendency of the price level by the prolongation of a mathematically fitted trend line is, it must be admitted, distinctly open to question. The trend of the price level does not necessarily follow any mathematical curve. Altho a curve may be fitted to the series of index numbers representing the movement of the price level for any period for which we have the data, there is no reason for believing that the extension of this curve into the future will furnish us with the correct trend of the future price level. On the other hand, the trend of general industrial growth in the United States has proceeded upward in very regular fashion for over fifty years,[9] and it is possible to make predictions, at least for a moderate period of time in the future, with some expectation of accuracy. It is therefore suggested that the proper criterion for the regulation of the currency, so that it may best perform its function as a medium of exchange, is the expected volume of production, rather than an index number of the price level.[1] Such a plan, if carefully followed

9. Carl Snyder, Business Cycles and Business Measurements (1927), ch. II, contains a detailed study of economic growth in this country.

1. Since the recent absorption of credit by the stock market (written in April, 1929) a number of observers have emphasized the necessity of adjusting the supply of credit to the volume of trade or production — as shown by current indexes — if inflation is to be prevented. A few scattered instances may be cited: L. Brown, "Too Much Gold," Proceedings of the American Statistical Association (March, 1929), pp. 201–206; H. L. Reed, "Federal Reserve Policy and Brokers Loans," Proceedings of the American Economic Association (March, 1929), pp. 82–83; National City Bank Letter, "A Study of the Credit Impasse and Corrective Measures," Special Edition, April 18, 1929. See also a suggestion in the writer's Money (1928), p. 385.

It should perhaps be added that no distinction is usually drawn in this connection between indexes of the volume of physical production and indexes of the total volume of trade. At times the distinction is unimportant, but there is good reason for thinking that an index of physical production furnishes the better criterion of the two for purposes of currency regulation. See the following paragraph in the text and also note 3, below.

out, would eliminate wide upward and downward sweeps in the trend of the price level, and would, to this extent, result in a stabilized purchasing power of the monetary unit.[2]

The question will doubtless arise as to the propriety of using an index of the physical volume of production for this purpose instead of a more comprehensive index of the total volume of trade of all sorts. The present writer believes, however, that the quantity of money should be adjusted to the normal increase or decrease in the wealth of the country, and that an index of the volume of production comes closer to measuring changes of this sort than would the more comprehensive index. The latter includes speculative elements as well as duplication resulting from the transfer of goods through numbers of hands while in the marketing process. Such factors are probably pretty well offset by variations in the velocity of circulation of money and the rapidity of turnover of bank deposits, and they do not constitute a real increase in the wealth of the country. It seems wise, therefore, to decide on the use of a production index in determining the proper regulation of the quantity of money.[3]

2. The evidence seems to indicate that the expected volume of production cannot be predicted with quite as great certainty of accuracy as the expected population. Nevertheless, the fact that five different indexes of production, computed by varying methods by four different investigators, have shown strikingly similar rates of growth over a fairly long period of years would appear to indicate that approximate accuracy is possible in the prediction of the volume of production. See Carl Snyder, op. cit., p. 48.

3. Since arriving at the above conclusion, I have been pleased to note the expression of a similar opinion by the late Professor Allyn A. Young:

"It will be observed that I put special stress upon the importance of maintaining — if anything like stability of the value of money over a long period of years is to be secured — a fairly stable relation between the rate of increase of the total volume of currency and credit, and the rate of increase of the annual production of wealth. There are some who hold that the thing with which the total supply of purchasing power

In carrying out the plan proposed above, the government would have to coin or issue standard money in proportion to the expected increase in productivity in order to expand the reserves of the banking system with sufficient rapidity to allow the banks to meet the increased demands of their customers, as resulting from the economic growth of the country. As this money was paid out by the government, it would find its way into the individual banks, and thence into the central bank to build up the reserves of the former institutions. Reserves of the central bank would thus be increased at a rate which would keep pace with the advancing needs of industry, and, so long as the reserve requirements of the banks were not altered, no marked upward or downward tendency in the trend of the price level would be likely to occur.

As a check on the preceding analysis, it will be of interest to try to ascertain how such a plan, if followed, would have worked out in the United States prior to 1913, even in the absence of a central banking structure. The interval chosen for a test period is 1900–1911, as representing a series of years during which the monetary and banking systems of the country were

should be compared is not the amount of wealth produced annually, but the aggregate volume of exchanges or transfers which call for money payments.

"I believe that adherence to this latter view has put monetary theorists upon a false scent. It leads on the one hand to sterile truisms, such as that the aggregate amount paid for goods in the course of a year is equal to the number of units of goods sold multiplied by their average price per unit. It leads on the other hand — if one attempts to proceed beyond these sterile truisms — to confusion in respect of the meaning and effects of changes of the 'velocity of circulation' or rate of turnover of money and credit."

See A. A. Young, Downward Price Trend Probable, Due to Hoarding of Gold by Central Banks. Reprinted from the Annalist of January 18, 1929, by The Stable Money Association.

operating under fairly settled conditions.[4] At first glance, it appears that the plan proposed would not have functioned satisfactorily during this period. The trend of Day's index of the volume of production [5] rose from 68.55 in 1900 to 99.04 in 1911,[6] an increase of 44 per cent. The monetary stock of the country rose from 2,223 millions of dollars to 3,556 millions in the same interval,[7] an increase of 60 per cent. If, then, we take the equation of exchange in the form $p = \frac{M}{T}$, disregarding the rapidity of turnover of both goods and money as unnecessary in a long-run calculation of tendencies, and consider M and T each as 100 in 1900, then substituting the percentage increases in T and M as calculated above, we get $p = \frac{160}{144} = 1.11$. According to this calculation, the trend of the price level should have risen 11 per cent; whereas, actually, it rose 22.5 per cent.[8]

It will be recalled, however, that the period in question saw a large increase in the use of deposit currency in this country. According to Mitchell's estimates, deposit currency in the United States increased in amount from 4,205 millions of dollars in 1900 to 8,242 millions

4. The year 1911 has been selected as the last year of the period, instead of 1912 or 1913, because certain of Wesley C. Mitchell's estimates, which have been used in the following calculations, are available only through the earlier year. All of Mitchell's estimates referred to in the succeeding paragraphs are to be found in his Business Cycles, 1913 Edition, pp. 302–303.

5. Review of Economic Statistics (1921), p. 20.

6. Straight line trend, $y = 82.3 + 2.79x$, for the period 1899–1911 with the origin at July 1, 1905. This and the other trend lines used in the present analysis have been calculated for periods for which a good fit could be obtained, and which frequently do not coincide exactly with the test period.

7. Mitchell, loc. cit. No trend line has been calculated for this series as it shows relatively little cyclical fluctuation.

8. From 79.7 in 1900 to 97.7 in 1911; the same line of trend is used as in Table I above.

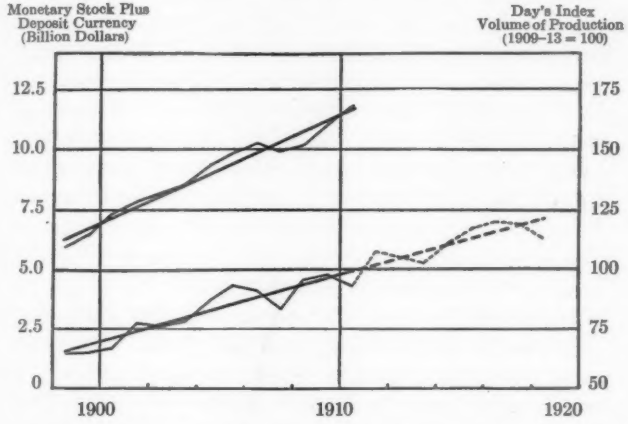
in 1911,[9] or 96 per cent. Clearly, the volume of deposit currency was increasing at a considerably more rapid rate during these years than was the monetary stock. If, therefore, instead of using the increase in monetary stock alone, we add to these figures Mitchell's estimate of the volume of deposit currency, and calculate the percentage increase in the trend of this combined series for the period in question, our result should be more nearly accurate. The ordinates of trend of the latter series increased from 6,707.6 (in millions of dollars) in 1900 to 11,666.4 in 1911,[1] or 75 per cent. Inserting this increase in the numerator of our fraction in place of the 60 per cent used in the preceding computation, we obtain $p = \frac{175}{144} = 1.215$. This gives a calculated increase of 21.5 per cent, as compared with the actual increase of 22.5 per cent already noted for the Bureau of Labor Statistics index of wholesale prices. The two series used, with their respective lines of trend, are shown on the accompanying chart. In order to illustrate the possibility of using a projected trend line for purposes of forecasting the physical volume of production, the trend of Day's index, which was calculated for the period 1899–1911, has been extended through 1919, and Day's index figures for the years 1912–1919 have also been plotted. It will be observed that the projection of the calculated trend line fits the later years of the production series in very satisfactory fashion.

Too much stress should not be placed on the accuracy of the results obtained under the preceding analysis. The use of somewhat different periods in the compu-

9. Mitchell, loc. cit.

1. The equation of the line of trend is $y = 8961.6 + 450.8x$, for the period 1899–1911 with the origin at July 1, 1905. This series, containing as it does the volume of deposit currency, shows some slight cyclical fluctuation, so that the trend has been used instead of the original figures.

tation of the trend lines might very possibly yield appreciably less satisfactory results.[2] Nevertheless, the closeness of the computed and actual increases in the trend of the price level in the present instance may be taken as an empirical substantiation of the conclusion



Monetary Stock plus the Volume of Deposit Currency in the United States, and Day's Index of the Volume of Production, with lines of Trend.

that the proper adjustment of the quantity of money to the increase in the volume of production would tend to stabilize the trend of the commodity price level.

Altho the plan which has been suggested would not have worked out satisfactorily in the United States prior to 1912 because of the rapid increase in the volume of deposit currency, it does not seem probable that the latter factor would militate against its success in a

2. I have carried through the calculation both for other periods and for the same period, but with trend lines fitted to different series of years. The computed results, while somewhat less close to the actual than in the example used here, were accurate within 3 per cent in every case tried.

country where the check system had reached a fully developed stage. Once checks are used for practically every type of payment for which they are suited (as in the United States at the present time), a regular increase in the quantity of standard money would result normally in a corresponding, although manifold, increase in the quantity of deposit currency. The obvious advantage of the plan over one requiring the regulation of the currency on the basis of an index number is that it is less rigid. The central bank could continue to operate in approved fashion to insure a sound credit and banking structure and to prevent, so far as possible, the overexpansion of bank credit, without being forced to curtail credit expansion every time the index number rose one per cent or so, and to attempt to expand credit in the event of a fall in the index, whether such action were desirable or not. The immediate or short-run needs of business would not always be best met by a policy of index number control. To illustrate, suppose that a certain year is attended with a series of partial crop failures with resulting high prices for a number of important crops. This would be likely to result in a rise in the price index (especially if a wholesale price index were the criterion used). Nevertheless, proper banking policy would require that the farmers who had suffered financially from short crops should be carried over the poor year at reasonable rates of interest. Under a policy of index number regulation, this could not be accomplished except at the expense of the legitimate credit needs of other producing groups, and even then rates would have to be raised to unreasonable heights in order to shut out these other competitors for credit.[3] It is highly undesirable that a central bank

3. Compare H. L. Reed, The Development of Federal Reserve Policy (1922), p. 330.

should be saddled with the duty of attempting to maintain a stable price level over short periods of time when that duty must frequently conflict with the dictates of sound credit policy. It is, of course, true that the price level is one fairly important indicator of credit conditions, but it can be wisely used as a criterion of credit policy only in conjunction with other significant data, and only when a very considerable amount of discretion is allowed to the banking authorities of the country.

The great flaw in the analyses of the majority of students who advocate a stable price index as the one outstanding criterion of credit policy is that too much stress is placed on the short-run effects on business stability which can be expected to result from such a policy. Witness, for example, the optimistic comment of the Executive Director of The Stable Money Association to the effect that "the necessity for a 'prosperity reserve' will be lessened, because periods of depression and boom, in so far as they are due to monetary factors at least, and these are the ones of greatest import, will have been abolished."[4] In contrast to this, the present writer ventures to cite his own conclusion on the same point:[5] "The reformers, it seems, have been barking up the wrong tree. The evil consequences of the business cycle, which they propose to eliminate, have their sources primarily in the dislocation of trade and industry rather than in the present monetary system and could not be eradicated by the methods proposed." The careful and accurate studies of Mitchell and Mills,[6] it seems

4. Norman Lombard, The Proposed "Prosperity Reserve" [of Governor Brewster], Bulletin of The Stable Money Association (December, 1928), p. 7.

5. F. A. Bradford, Money (1928), pp. 390–391.

6. W. C. Mitchell, Business Cycles, 1913, and Business Cycles: The Problem and its Setting, 1927; F. C. Mills, The Behavior of Prices, 1927.

to me, point strongly in the direction of the latter conclusion. And it may be ventured by way of opinion that the knowledge obtained from such studies, the work of the Harvard Economic Society and other scientific forecasters, and the employment of trained statisticians and economists by forward-looking business concerns, will accomplish more toward the elimination of instability in business than the adoption of any stable money plan that has yet been, or seems likely to be, proposed.[7]

All this does not gainsay the statement that the monetary factors of the business cycle "are the ones of greatest import," if it is taken in a broad sense. It does not deny the possibility of some worth-while control of these factors by the central banking authorities. It does, however, dispute the possibility of accomplishing much in this direction through the single expedient of attempting to control every fluctuation of the index of prices. It seems strange that more of the advocates of stable money should not have recognized that a policy of credit control which aims at the prevention of over-expansion — the nice adjustment of credit supplies to business needs — and which, in so doing, makes intelligent use of all available data in attempting to maintain a sound credit and business structure, has far more chance of assisting the cause of business stability than that policy which focusses its attention solely on the maintenance of a stable price level.

7. In this connection it is interesting to note the opinion of Mr. George E. Roberts in the National City Bank Letter for March, 1929, p. 36: "Statistics of the major industries relating to production, shipments and stocks on hand, compiled in recent years by the Department of Commerce and various trade associations have supplied the facts upon which industry can adjust its operating schedules to make production correspond with demand. Their use has contributed in no small measure to this condition of constant but small readjustments, to ironing out the extreme cycles of prosperity and depression that were customary up to a few years ago."

IV

In spite of the fact that a rather strong defense of a stable trend of the price level can be built up along the lines developed in the preceding section, it by no means follows that a plan of the sort there suggested is to be advocated as a practical reform. It is not intended here to enter into a discussion of the practical difficulties which beset any plan for the stabilization of prices.[8] It will suffice to point out that any plan which requires the abandonment of the gold standard, or some generally accepted fixed metallic substitute, is bound to lead to a disruption of the foreign exchanges and disorganization in the export and import trades, with a consequent strong presumption in favor of the domestic failure of the plan. On the other hand, the plan of regulating the internal price level, while yet maintaining an international gold standard, is fraught with difficulties which seem likewise to foredoom it to failure.

In view both of the complexities which surround an attempted stabilization of the price level and of the very tolerable performance of the gold standard under reasonably settled conditions in the past,[9] it seems perti-

8. For a detailed analysis of such difficulties, see Mr. J. S. Lawrence's excellent critical discussion of proposed stabilization plans in his Stabilization of Prices, 1928.

9. There has been a decided tendency for writers to exaggerate the unsatisfactory performance of the gold standard in the past by choosing periods of extreme monetary disturbance — such as the War period — for purposes of comparison with a stable price level. When, as occasionally happens, a more settled period is chosen for reference, — say, for example, 1900–1910, — the injustice to churches, colleges, widows, orphans, *et al.*, is the point stressed. It has been shown that the remedy for this sort of injustice is not a stable price level, but one which varies inversely as productive power. In the period 1900–1910, the population of the United States increased about 21 per cent, while the volume of production rose approximately 42 per cent. Thus, to secure justice, the price level should have fallen some 15 per cent during that interval instead of rising (as it actually did) about 20 per cent. A stable price level, under such circumstances, would have been little more than a halfway measure in the cause of equity.

nent to inquire the reason for such insistence on some change from the latter standard. The explanation probably differs with the different viewpoints of the various stabilizers. Some are disturbed because of the prospect of a decline in the rate of gold production which would bring about a decline in the trend of the price level to the detriment of business and the War debtors. Others, who have the interests of business at heart, are advocating reform because they are of the opinion that the business cycle can be thus eliminated. Still a third group is concerned chiefly with the injustice of a price level which is either rising or falling.

The probability of a long-period downward drift in the trend of prices, unless stabilization measures are introduced, is now recognized by a number of monetary students,[1] and concern is frequently expressed over the possible undesirable results of such a tendency. The injurious effects of a declining price level on business are worthy of consideration, but may easily be exaggerated. The extent of the injury depends upon the reason for the downward tendency. If it results from deflationary policies on the part of the banks, then the effects may well be harmful. If, however, the declining trend arises solely out of an increase in per capita productivity, there is little cause for alarm. In the latter case, even the country with heavy war debts will not suffer unduly since, altho more goods are necessary to pay such debts, more goods will be available and average money incomes no less.

The tendency of the price level to sag may, it is true, prove detrimental in specific instances. In England, for example, the volume of production has not increased

1. See the articles by Professors Young and Edie already cited, and also R. B. Westerfield's "As the World's Price Level Falls," in the Burroughs Clearing House, February, 1929.

perceptibly from 1924 to 1928,[2] while the price level (Board of Trade) has fallen from 166 to 140 during the same period, with the population remaining about constant. This distressing situation, however, seems to have been the result of an inability of English trade and industry to adjust itself to post-war conditions throughout the world rather than of monetary scarcity, and the fact that the deposits and advances of the nine clearing banks have increased slightly during the interval seems to substantiate this conclusion. In countries in which the volume of production is increasing at a more rapid rate than is the population, on the other hand, a downward tendency in the price level trend need not be disturbing. As far as the gold standard countries of the world — taken in a body — are concerned, no great anxiety need be felt as long as the available supply of monetary gold continues to increase at as rapid a rate as does the population of these countries.

That the monetary supply of gold will continue to increase as rapidly as population for some years to come seems probable.[3] Altho in recent years, the central banks of some countries have probably influenced the downward tendency of the price level by their efforts to build up their gold reserves, once they have accumulated as large reserves as they deem necessary, this disturbing factor on the demand side of the situation will be largely eliminated and supply forces will again dominate the determination of the long-run or normal value of money. While it is doubtless desirable, from the point

2. The index stood at 100 in 1924 and 100.4 in 1928. These and other statistical data for England are from the Royal Economic Society Memorandum No. 13, January, 1929.

3. See Mr. Joseph Kitchin's estimate in The Review of Economic Statistics, July, 1926, p. 119. A rough estimate for the five years to 1935 (1930–1934) places the per capita gold available as money at 272*d*., the same as the amount estimated for the period 1925–1929. See also A. A. Young, op. cit.

of view of business,[4] that monetary gold production should keep pace with economic growth, the situation does not yet appear to be so alarming as to warrant a departure from the free gold standard, in view of the hazards involved in such a step.[5]

There is little to recommend the other two reasons for the advocacy of a stable price level. There is good reason for supposing that the maladjustments of the business cycle can be mitigated to a greater extent by other means than by any attempt to regulate the price level. On the other hand it has been shown in an earlier section of this paper that justice demands a price level which varies inversely with the productive power of the country rather than one which is kept stable. In fact, from the point of view of equity, it seems clear that a retention of the gold standard is decidedly to be advocated. It has been indicated in the preceding paragraph that the supply of monetary gold will probably increase in proportion to the population for some years at least. If this turns out to be the case, the trend of the commodity price level may be expected to vary inversely as productive efficiency in the gold standard countries. This would meet the requirements for a real *standard* of value and would insure greater social justice than a stable price level.

On the whole, then, the movement for a stable price level is not deserving of complete approbation, even from a theoretical standpoint. It has taken unto itself

4. While the trend of the price level could fall only in response to increased productive power as long as the money stock were increasing in proportion to the population, it is probable that economic growth would be smoother if the quantity of money were to increase in proportion to that growth as indicated in Part III above.

5. It is, of course, true that if gold production should fall to a point where the supply of monetary gold failed to keep pace with the growth of population, there would be good reason for advocating some change from the gold standard.

the cause of social justice, whereas the ends of justice — so far as the standard of value is concerned — require a distinctly different regulation of the price level from that which is advocated by the stable money adherents. This confusion with regard to the nature of a true standard of value has led to the contention that the interests of business and those of equity are identical, whereas, as a matter of fact, no such identity necessarily exists. Even with respect to the course of business activity, where there is a theoretical justification for a stable level of prices, the beneficial effects which may be expected from stabilization have been greatly exaggerated by a considerable number of writers. It is this notion of the enhanced importance of the proposed plans which forms the most objectionable feature of much of the stable money literature. In the words of one competent lay observer,[6] the writers in question belong to that class of people who have acquired "what might be called the panacea habit of mind. Beginning very often in some penetrating insight or analysis, this sort of mind soon becomes incapable of seeing anything besides that portion of reality which sustains the insight and is subject to the analysis. A good idea, in short, becomes a fixed idea. . . . The most amazing of all are people who deal with the currency question. Somehow or other, long meditation seems to produce in them a feeling that they are dealing with the crux of human difficulties."

There is, of course, good reason for desiring a reasonable degree of stability in the purchasing power of the monetary unit, and such plans as promise any real advantage over present arrangements are deserving of seri-

6. Walter Lippman. The quotation is from his Drift and Mastery, reprinted in part under the title of Drift in G. C. Clancy, Thought and its Expression (1928), p. 219.

ous consideration. But the thoughtful student of money will be inclined, in the end, to conclude with Robertson,[7] "that Money is after all a fundamentally unimportant subject, in the sense that neither the most revolutionary nor the 'soundest' monetary policy can be expected to provide a remedy for those strains and disharmonies whose roots lie deep in the present structure of industry, and perhaps in the very nature of man himself."

7. Money (1922), Preface, p. vii.

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THE REFORM OF LOCAL TAXATION IN GREAT BRITAIN

SUMMARY

I. Reform of British local taxation overdue, 697. — Differences between central and local tax systems, 698. — Defects of the latter, 699. — Burden of local rates on depressed industries, 700. — II. Changes in Scotland, 703. — III. Aims and salient features of the new legislation, 703. — The formulae, 705. — IV. Criticisms of the new arrangements, 707. — Certain producers are, in effect, subsidised, 708. — The problem of differentiation, 709. — Objection to block grants, 711. — Special concessions, 711. — Conclusion, 712.

I

THE Local Government Act, placed on the statute book on March 27, 1929, marks a new and important stage in British local taxation. Nothing is definitive in matters of this kind; but the new act bids fair to stand long, and in any event to have a profound influence on later legislation.

Reform of the antiquated machinery of British local government is long overdue. For forty years past, various necessary changes have been proposed, only to be postponed. For example, the transfer of the functions of the Boards of Guardians of the Poor to the County Councils was suggested by Joseph Chamberlain as long ago as 1888.[1] Recommendations along similar lines were made by the Poor Law Commission of 1909 and by the Maclean Committee of 1918, but only in the last year has a definite move been made. Failure to move with the times has weakened the structure of British

1. Hansard, April 16, 1888.

local government and made the task of reform intricate and heavy. During the forty years since 1888 the population of England and Wales has increased from 29 millions to 39 millions. Some industries have decayed and new ones have risen in their places. New services have been inaugurated and developed by the local authorities, whose expenditure has increased from £36,000,000 in 1891 to some £250,000,000 at the present time (approximately equal to £140,000,000 if adjustment be made for the change in the value of money); and an important and increasing volume of traffic has at last returned to the roads. "During the last 25 years," Mr. Neville Chamberlain told the House of Commons on November 26, 1928, "the average expenditure by local authorities per mile of road, after making allowance for the difference in the value of money, has risen from £60 to £160, a rise of 166 per cent." [2] For these and other reasons which will be discussed below, the burden of local taxation in Britain has grown heavier and more unequal in its distribution.

The common phrase "rates and taxes" is, to a certain extent, misleading, since it seems to imply that "rates" are not taxes, whereas, in fact, local rates are an important part of the whole British system of taxation. The distinction, however, is not without a difference. Theoretically, definitely local benefits are supposed to be provided out of taxation levied locally, while expenditure essentially national in scope is supposed to be met by taxes levied by the central government. But borderline cases immediately emerge. Efficient police services, admittedly of local importance, are also indispensable to national life: and the same may be said of education. To meet such cases a system of grants in aid of local revenues has been evolved. Hitherto, these grants have

2. The Times, November 27, 1928.

been made on a percentage basis, out of the Central Exchequer, on condition that local authorities submit to inspection designed to ascertain whether the service towards which the central government is contributing is in fact reasonably efficient.

Two other differences between our local and central tax systems may be noted. Firstly, the *rate* of local taxation varies from district to district; but a central tax is levied at a uniform rate throughout the country. Secondly, a local rate is an *ad valorem* tax assessed upon the letting value of land, dwelling houses, warehouses, factories, and the like; whereas the central taxation system is much more varied, certainly more scientific, and, on the whole, more equitable, since it reaches all classes of persons by taxes, direct or indirect, approximately in proportion to their abilities to pay. One must say "approximately," since the perfect system of taxation has yet to be worked out, and, as the Colwyn Report clearly showed, married persons in Britain with small families, receiving incomes of less than £500 per annum are still regressively taxed.

There are numerous weighty objections to the continuance of local taxation in its present form. In the first place, the occupation of premises of a certain letting value is not necessarily a good criterion of ability to pay. A and B may have similar incomes, but if A is a married man with a family of five children he will naturally occupy a larger house than B, a bachelor. Obviously the calls upon A's purse are certain to be heavier than those upon B's, and the income tax regulations recognise this and give A certain exemptions which, in effect, reduce appreciably the rate at which he is taxed. Not so the local rating system, which taxes A much more heavily than B because, perforce, the former lives in a larger house. Similarly and just as seriously the burden

of local taxation falls upon a manufacturer owning a large factory, but badly hit by trade depression. His profits may be zero or a minus quantity, but he will have to pay a much larger sum in local rates than, let us say, a broker occupying a small office from which he transacts a large volume of business upon a commission basis. This unequal distribution of the burden of local taxation between commerce and industry is worthy of more attention than it has hitherto received. But even within commercial circles the local tax burden falls inequitably. Some businesses, for example, can sell their goods from catalogues, or by sending small samples; others must have large window displays, and therefore large highly rated premises. Again, traders who have to carry considerable stocks must own or rent large warehouses; but those whose business is of such a nature that a small stock suffices are thereby relieved of a large proportion of the burden of local taxation, irrespective of the amount of their profits. Furthermore, firms, approximately similar in other respects, are frequently found to be bearing different rate-burdens, even after allowance has been made for local variations of assessment, because their premises are in different localities. The local rates levied in various towns and urban districts in England and Wales in 1926–27 ranged from 7*s.* 4*d.* to 25*s.* 3*d.* in the pound.[3] "Poor Law charges in urban unions vary from 5*d.* in the pound in Blackpool to 10*s.* 5*d.* in Gateshead, and in rural unions from 2¼*d.* in Howden to 5*s.* 4¼*d.* in Portardawe." [4]

It is well known that rising rates in certain districts have caused industrial and commercial concerns to move to low-rated areas, at a cost in cash and dislocation which they would have been glad to avoid, and which

3. Municipal Year Book, 1928.
4. The Times, November 27, 1928.

sometimes entails a net economic loss to the community as a whole. The Liberal Industrial Report [5] quite rightly points out that "not only are rates heavy; their burden is spread most unequally between different industries and districts . . . the very industries which are the worst hit and have the greatest difficulties to overcome are by reason of the vicious incidence of rating subjected to the heaviest deterrents. In just those districts where there is the most unemployment, and where it is therefore most desirable that new industries should be established, a special discouragement is extended to any manufacturer who is looking out for a site for a new works."

In the second place it may be urged that so many forms of property now exist that a system which taxes property in the shape of land, buildings, mines, etc., but allows other forms to go free, is anachronistic and anomalous. Immovable property is, in short, an increasingly imperfect indicator of ability to pay.

Thirdly, with regard to income tax it may be said that it does not impede the progress of struggling concerns and help to drag them into bankruptcy when trade is bad, because the tax is levied only when profits have been made, and in proportion to those profits. But no such argument can be put up in defence of local rates in this country. Considered in relation to business activities, these local taxes are open to the serious charge that they are unresponsive to the fluctuations of trade. They are not only a cost, but a cost completely outside the control of the producer, be he farmer, manufacturer or mine owner; an individual or a corporation. With the best will in the world towards the more economical organisation of his plant, the producer cannot

5. Britain's Industrial Future, p. 434.

cut this item of cost. Nor is the burden negligible, as the following figures [6] show:

STEEL

Cost of local taxation per ton of crucible steel

June 30, 1914	3*s.*	0*d.*	
June 30, 1924	21*s.*	0*d.*	per ton of actual output.
	6*s.*	8*d.*	if the plant had been working to its full capacity.

SHIPBUILDING

	Local taxation			
	Per vessel built		Per dead weight ton	
	1913 £	1923–26 £	1913 *d.*	1923–26 *s. d.*
Yard A	268	3,182	8½	7 5
Yard B	89	2,161	3	5 6½
Yard C	246	1,850	6¾	4 6½

COAL

	Local taxes pence per ton	Selling price per ton	Local taxes as percentage of S. P.
June 1914	2	12*s.* f.o.b.	1.39
June 1927	9.8	13*s.* f.o.b.	6.28

The average rate of local taxation in the £ of assessable value rose from 6*s.* 8¾*d.* in 1913–14 to 12*s.* 5½*d.* in 1926–27; and the amount collected per head of population averaged £1 18*s.* 11*d.* in 1913–14, and £4 2*s.* 0*d.* in 1926–27.

In periods of trade depression the growth of unemployment and poverty increases the demands made upon the funds of local authorities, while every producing plant which closes down diminishes the sources from which those funds must be drawn. Hence the local tax-burden upon the remaining establishments becomes not only absolutely greater, but very frequently greater relatively to the volume of business they are able to do in the circumstances. The localisation of industries, of

6. Taken from the reports of the Balfour Committee on Industry and Trade, and the Liberal Industrial Inquiry.

course, accentuates these difficulties, and we have the rate of taxation rising sharply while ability to pay is falling. This is, one need hardly remark, in direct opposition to the general trend of twentieth-century taxation policy in Britain.

II

The objects of the new local government legislation for Scotland are the same as for England. The administration of poor relief, maintenance of highways, and the major public health services are to be transferred to the County Councils and the Councils of Burghs of more than 20,000 inhabitants. "Owing to the concentration of unemployment in a few thickly populated areas the burden of the Poor Law, which is still administered on the basis of the parish, is even more unevenly distributed than in England. More than three-quarters of the pauperism in the whole country is concentrated in thirty-seven parishes; the remainder is scattered over the other 832 parishes. Poor rates in 1926–27 varied from nil in the parish of Moonzie, in Fifeshire, to 17*s.* 3*d.* in the parish of Lochs, in Ross-shire. The incidence of highway charges is hardly less anomalous, varying from 2*d.* in the burgh of Cockenzie to 12*s.* in the Lewis district of Ross-shire." [7] Under the new scheme the local services of Scotland, which has only a few more inhabitants than the County of London, will be administered by some 234 independent authorities, instead of nearly 1300.

III

The Government's chief aims in reforming the local rating system are to lighten, both directly and indirectly the burden of local taxation upon agriculture and in-

7. The Times, December 15, 1928.

dustry, to spread the burden more evenly, and to modernise the machinery of administration. A step in this direction was taken as long ago as 1896 when the Agricultural Rates Act reduced the local rates on agricultural land to one-half of the normal or full rate of tax. In 1923 a further reduction was made down to one-quarter of the full rate; and two years later this differential exemption was extended to agricultural buildings. The new Act goes further and gives relief in respect of certain "productive" types of property, namely — (*a*) agricultural land and buildings (but not, apparently, farm houses and cottages) which are to be entirely and unconditionally exempted from local rates; (*b*) industrial and mining properties, which are to be rated at one-quarter of the full rate; (*c*) "freight transport hereditaments," to be derated as in (*b*) but *on condition* that the whole of the sum so saved shall be devoted to the reduction of freight charges upon certain classes of goods, such as agricultural produce, coal, and iron.

Public utility undertakings are not be be derated because they enjoy monopolistic or quasi-monopolistic advantages, generally conferred by law. The other types of property which are not to be derated are dwelling houses, retail shops, distributive wholesale business premises, and other premises not used as factories and workshops. Administrative difficulties will doubtless arise where premises fall only partly within the "productive" category, but if the value of the non-productive portion does not exceed ten per cent of the total value, it is provided that the premises shall be deemed to be wholly productive. The freight transport concerns — railways, docks, canals, and light railways — will not receive relief upon the whole of their properties, for derating will not extend to those portions which are oc-

cupied as dwelling houses, hotels, refreshment rooms, storehouses for merchandise in transit, or sheds for housing or maintaining road vehicles.

Clearly all this derating will mean a fall in the revenues of local authorities, but not in the tax liabilities of the nation as a whole. What owners or tenants of "productive" properties do not pay, other taxpayers must. But this does not necessarily mean that the new legislation is bad, or that it will, or ought to, fail. Surely Mr. Harold Cox is at fault when he says, "It is perfectly right that the Government should deal with such problems as the burden of rates on industry, the administration of the poor law and the maintenance of public roads, but we shall make no real progress if the resulting financial changes merely mean a transference of the burden of public expenditure from ratepayer to taxpayer." [8] It can hardly be denied that a given burden may be carried clumsily with excessive exertion, or skilfully with strict economy of effort. A walker will carry a weight of x pounds slung comfortably from his shoulders farther and faster than the same weight in an awkward square box without a handle. So that the transference of some portion of the local tax-burden to the shoulders of the general body of taxpayers may be a great improvement. This is what the new legislation does. The fall in the revenues of the local authorities will be made good not by local taxes, but by central taxes, and many, but by no means all, of the objectionable features of the former will thus be removed or reduced.

Not only will a system of "block grants" shortly supersede the familiar percentage grants in aid, but State aid will be given upon different principles. Such a basis as the actual population of each local government

8. The Secretary (November, 1928), p. 654.

area is too rough for the task in hand. The new formula "weights" the actual population of each area according to the magnitude of certain social and economic facts: namely, (*a*) the rateable value per head of population; (*b*) the proportion of the population under five years of age; (*c*) the density of population per mile of public road (excluding London); (*d*) the amount of unemployment. The "weight" or allowance for rateable value is to be reached by calculating the percentage by which the rateable value per head of population falls short of £10. This is designed to help large areas containing a great deal of low-valued property, and dense, poor populations. The allowance in respect of young children, designed to encourage the continuance by local authorities of child-welfare work of various types, will be arrived at by calculating for each county and county borough the percentage by which the number of children under five years of age per 1,000 of the population of the area (as shown by the last previous census) exceeded 50. The application of these two weights to the actual population of a certain area will give a figure which we will call, for convenience, the "provisional weighted population." Now to this provisional weighted population two other weights become applicable. (1) Where the estimated population per mile of roads is less than 100 persons, the provisional weighted population is to be increased by the percentage by which the estimated population per mile of roads is less than 200 persons; and where the estimated population per mile of roads is 100 persons or more, the provisional weighted population is to be increased by the percentage which 50 bears to the estimated population per mile of roads. (2) In order to give extra State assistance to areas badly hit by trade depression, unemployment, and poverty, a fourth weight, based upon the proportion

of unemployed insured men to the total estimated population of the area, is to be used. If this proportion, averaged over three years, exceeds 1½ per 100 of the estimated population, then the provisional weighted population is to be further increased by a percentage equal to ten times the excess over 1½ per 100.

An official document (Cmd. 3134) dealing with the application of these weights to the County of Durham, where industry languishes and unemployment and poverty are rife at the present time, shows that an estimated *actual* population of 996,700 persons becomes a *weighted* population of 4,382,585. The total sum available for distribution to local authorities from the central exchequer will be divided in proportion to these weighted populations. Thus it is estimated that County Durham would receive approximately 2*s.* 7*d.* per head of its *weighted* population, but owing to the magnitude of the weights in this instance, such a grant would work out to nearly 11*s.* 6*d.* per head of the *actual* population.

IV

The new arrangements are by no means beyond criticism. With regard to the allowance for unemployment in each area, I hold that we should no longer be bound by the remains of the ancient practice, never at any time entirely satisfactory, of making each parish responsible for its own poor. Unemployment, and poverty which largely flows from it, are national responsibilities. The British State scheme of unemployment insurance already operates on a national scale, and the time is ripe for the State to take over from local authorities the system of relieving the able-bodied poor and to join it on to the unemployment insurance machinery already in existence. Not only would some improvement in our methods of handling the unemploy-

ment problem be likely to follow from such a change, but the allocation of grants to local authorities would be simplified by the elimination of one of the four weights.

The formula, further, is complex, and consequently lends itself to adverse criticism. It has been urged, for instance, that the formula gives too much weight to children under five, and too little to the prevalence of unemployment; and that *rateable value* per mile of roads would be preferable to *population* per mile of roads. The exclusion of unemployed insured women from the formula has also excited adverse comment. As an alternative to the formula it has been suggested that the sum available for distribution as grants should be divided into separate funds, each to be distributed according to a single factor only, and not according to the result of the combination of several factors. Thus, the grants fund might be subdivided as follows:

Proportion of fund per cent	Distributed according to
23	Actual population
25	Numbers of young children
27	Rateable value
25	Unemployment

But it seems probable that this would be open to as many objections, of one kind or another, as the existing scheme. Certainly a battle royal could be fought over the proportions of the fund to be allocated to each factor. Finally, the elimination of the interdependence of the weights (i.e. none of the weights to be applied to the provisional weighted population, but all calculations to be made upon the actual populations) has been suggested. This would have the effect of reducing the significance of the road-mileage and unemployment weights, and is therefore undesirable.

The relief given is in effect a subsidy to users of "productive" property: (*a*) directly by reducing the amount

of local taxation payable; (*b*) indirectly by way of reduced charges upon certain goods when sent by rail or canal. Against this must be set the sums businesses are now paying in petrol tax (at four pence a gallon) out of the proceeds of which the central government's contributions to the coffers of the local authorities under the new scheme are very largely to be made. Suppliers of petrol have been able to pass the whole of the 4*d.* tax on to the consumers because of the relatively high inelasticity of the demand for petrol. No generalisation can be made regarding the net result. Obviously, the net gain or loss in each instance will depend upon the amount of local taxation previously paid, the quantity of petrol now consumed, and the amount gained (if any) from reduction of certain freight charges. Businesses that are not derated will pay more for their petrol, and, after the transition period, more local taxation if they happen to be in an area in which local taxes have been low; but less than before if local taxes have been high. Railways, canals, docks, etc., are not subsidised, since their share of relief from local taxation must be passed on to their customers in the form of reduced freight charges.

So far as industrial enterprises are concerned the test applied by the new legislation is not — how far they are suffering from lack of orders and profits; but — to what extent they are equipped with "productive" property. No differentiation is made, for instance, between prosperous and unprosperous concerns in the same industry using similar quantities of productive property. This fact has raised a great deal of criticism, in which the position of the prosperous brewing industry is most often cited. "The plain fact is," wrote "A Social Student" in the Observer of January 20, 1929, "that the concession of derating to brewery companies is just a cash present of £400,000 to their already

swollen profits without any industrial advantage to the nation. The authors of the amendment realise that this dole to the brewer will be very difficult to defend on the public platform at the General Election, and they suggest that a better use for this money would be to increase the grants for maternity and child-welfare, and most people will agree with them." With regard to brewing it is possible to urge that the State in this country has long subjected it to special control (e.g. through the grant of licenses to retail alcoholic drinks) and that in connection with derating, the brewing industry should be put into a separate category. But this still leaves the other prosperous industries, such as motors manufacturing, tobacco, and artificial silk. It seems that the case for differentiation is seriously weakened by (*a*) the actual difficulty of distinguishing between unprosperous, prosperous, and super-prosperous industries or industrial establishments. "What," asks a writer in the Certified Accountants' Journal for January 1929, "would be the dividing line between the industries to be assisted and those not to be assisted? What is to be the standard of profits which is to determine whether a particular firm is to have some of its rates remitted or not? And, if it came to such a pass, why should there be a flat rate remission of 75 per cent? Why should not those firms that are doing very badly get 100 per cent remission, while those firms making but a slender profit get only 25 per cent remission? There is no end to the proposals that might be put forward once the request for differentiation were acceded to." (*b*) The dissatisfaction caused if arbitrary lines be drawn. (*c*) The risk that such differentiation will, at least in certain instances penalise the efficient, alert, up-to-date producers and give a premium to the inefficient. The effect would be somewhat similar to the imposition of a tax upon efficient producers *in addition to* the existing income tax.

The chief objection to the new block grant system, which displaces the percentage grants, is that it *fixes* the amount of government assistance for periods of five years, while local expenditure may be expanding considerably, and local authorities may be deterred from embarking upon new schemes if *the whole* of the cost, instead of only 50 per cent of it, is certain to fall upon the funds of the local authority. This argument is strengthened by the derating of productive property, because any increases of local expenditure between the quinquennial revisions will fall in future upon a smaller aggregate rateable value in a great many areas.

Under the pressure of criticism, certain special concessions to local authorities to ease the transition have been made. "There are two guarantees relating to different periods. The first says that in the first period of five years not only shall no county and county borough suffer any loss by reason of the change, but that they shall actually be guaranteed a gain of not less than 1*s.* per head of the population. The second guarantee is that in the second five-year period, and in any five-year period after that, every county and county borough shall be guaranteed against any loss of rates and grants as calculated in the standard year. Those guarantees are subject only to two qualifying conditions. One is that if in a subsequent period the weighted population of the county or county borough has gone down . . . this guarantee will go down in proportion. The other condition, which is not very likely to come into operation, applies in the case where the total Exchequer contribution to the whole country has gone down, which it would do if the local expenditure went down, and in that case also the guarantee of the minimum would go down in proportion." [9] The selection of any one year

9. Mr. Neville Chamberlain, speaking on the Second Reading of the Local Government Bill.

as the standard year is open to objection, since for some areas the year selected will not be typical. For instance, certain areas contend that their burden of unemployment and poverty has increased since the standard year. This objection, familiar to those who construct or use index numbers, might be met by taking the average over a period of (say) five years; but it would not do, for this purpose, to take more than eight years, because this would bring in the abnormal post-war boom period.

Finally, the disturbing question has been raised, will owners and tenants of derated property take much further interest in keeping down local expenditure to reasonable proportions? Is it not possible that derated voters may support expenditure to which their contributions will be small, although they will be able to profit by the advantages following upon the expenditure?

Several of these criticisms are weighty, and proposals for further change are already in the air.[1] It must be admitted that the reform is only partial. The old basis of annual letting value still remains, and local taxation according to ability to pay is still not achieved, except occasionally by accident. None the less, the act stands out as a bold and carefully planned attempt at reform of British local taxation.

1. Thus Mr. G. D. H. Cole, in his recent book The Next Ten Years in British Social and Economic Policy, has outlined what, in his opinion, the next steps should be. While he thinks that there is a strong case for the abolition of local rates "and the substitution of other forms of local revenue" if other means of financing local services can be discovered, Mr. Cole objects to the present Act on the ground that it mixes two distinct problems (*a*) reform of the rating system and (*b*) assisting the depressed industries. He urges that the differentiation between ratepayers in the distribution of relief from local taxation ought not to be maintained; on the contrary, means should be found "of generalising for all ratepayers an amount of relief equivalent to that accorded (by the Act of 1929) to a restricted group." The taxation of land values is suggested as an alternative source of local revenue.

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THE BANK FOR INTERNATIONAL SETTLEMENTS

SUMMARY

Public interest in the Bank, 713. — Reasons for its establishment, 714. — Gradual development of the idea, 715. — Need of international financial coöperation, 716. — Structure of the Bank, 717. — Powers of the Bank, 721. — Size of the Bank, 721. — Conclusions: The Bank has two functions, primary and auxiliary, 723. — Impossibility of predicting what may be expected from the latter, 724.

THE new Bank for International Settlements has attracted more attention than any other feature of the plan suggested by the Experts' Conference of 1929. This is not surprising, since it is the most novel part of that plan. While the determination of the schedule of payments for Germany, with the accompanying provisions for transfer protection, deliveries in kind, etc., demand wisdom and judgment of a high order, they are extensions of the principles contained in the Dawes Plan, modified by the practical experience of nearly five years of operation of that familiar plan. The Bank was something new and inevitably, therefore, attracted more public attention than the schedule of payments.

Public interest in this country has focussed upon a feature of the Plan which is probably not the one of most immediate importance, tho having great possibilities for the future, — the possibility that the Bank may become an important agency of international coöperation in dealing with problems not necessarily connected with reparations, — to the exclusion of the reparation provisions which are much more important for the present. No doubt this is due to lack of information

regarding the reasons which induced the Experts to propose the Bank, for an understanding of the new institution requires some knowledge of its background, which has received little attention as yet.

The mandate of the Experts' Committee required it to "prepare proposals for a complete and final settlement of the reparation problem," and early in their proceedings the Experts determined that any such plan ought to place upon Germany the complete responsibility for reparation payments, without war-time sanctions or controls and without foreign supervision or administration of the transfer question. To this end it was decided to abolish the Reparation Commission and all its agencies, including the Agent General and his organization, so that no body or individual representing the Creditor Powers should be standing over Germany to determine the amount or time of reparation payments, or whether transfers could or could not be made at any given date.[1]

Upon reflection it became quite obvious that, while the Reparation Commission, the Agent General, and his associated organizations should be abolished, it would be necessary to have some organization, non-political in character, to receive (but without authority to collect through sanctions) from Germany the annuities which Germany would agree to pay and to distribute these annuities among the many creditor powers entitled to receive them, as well as to assist in deliveries in kind during the ten years for which they are to con-

1. In reaching these conclusions the Experts were in agreement with S. Parker Gilbert, Agent General for Reparations, who, in his report of December 10, 1927, said, "As time goes on and practical experience accumulates, it becomes always clearer that neither the reparation problem nor the other problems depending upon it will be finally solved until Germany has been given a definite task to perform on her own responsibility without foreign supervision and without transfer protection."

tinue. This was the primary object in the creation of the new Bank, and its first and compulsory duty is to handle the receipt and distribution of the annuities which Germany has agreed to pay on her own responsibility in foreign currency; otherwise there would be no body to perform these functions after the abolition of the Reparations Commission and the Agent General's office.

Some may question the necessity of inserting an organization of this character into the Experts' Plan. It might be suggested that Germany could perform these functions directly; but those who are familiar with the history and intricacies of the Reparation question during the last ten years agree upon the necessity for the creation of some body, payment to which will discharge Germany fully of her obligations in regard to reparations, relieving her from any responsibility for distribution. There are other functions in connection with the distribution of reparations which may become important and should be discharged by some non-political body, e. g., to "supervise and assist in the commercialization and mobilization of certain portions of the annuities." The reparation functions of the Bank are dealt with in some detail in the Plan itself, especially in Part 6 and Annex I.[2]

The idea of an international bank developed gradually. The first conception was simply that of a trustee for the administration of the mechanics of reparation payments; but it became increasingly clear, first, that an organization to perform even these functions satisfactorily would require a directorate and management of high caliber, and second, that the establishment of such a bank offered an opportunity to bring to realiza-

2. See also an article by Thomas W. Lamont, in World Trade (July), published by the International Chamber of Commerce.

tion certain conceptions of international financial co-operation which had long been discussed and long desired.

Before the World War there was little coöperation between the central banks of the different countries. International financial coöperation was left solely to private initiative. In the dark days of post-war financial chaos the necessity for such international action became vividly apparent. The Genoa conference in 1922 recommended a meeting of banks of issue, a suggestion which has been frequently repeated, but for various reasons never acted on.

In practice considerable coöperation has been achieved, largely through the leadership of several outstanding personalities. In the long run, however, it should not be dependent upon individual initiative or upon chance, but should be organized. Of this there has been a growing consciousness throughout the world. Just what tasks are to be accomplished through the coöperation of banks of issue in the next decade or two no one can predict. It may be that occasional loans to banks of issue will at times be important. It may be that some international transactions can well be cleared through an international agency, and that perhaps in this way gold movements can be lessened and gold economized if necessary. Whatever definite developments may take place, it seems clear that international financial machinery available for any emergency that may arise and for the gradual development of methods of international co-operation will be found useful.

For a number of years these considerations have been in the minds of thoughtful men who have come in contact with various phases of international finance; and as the Bank for International Settlements was gradually evolved by the recent conference, it became clear

that the organization required for the administration of the Young Plan was admirably adapted to performing some of these larger functions. This is expressed in the Committee's report in the following references to the Bank.

> It is obviously desirable, in the interest of obtaining results with the greatest efficiency, not to limit unduly the functions of the institution. The character of the annuities and the magnitude of the payments to be transferred over the exchanges provide at once the opportunity and the need for supplementing with additional facilities the existing machinery for carrying on international settlements, and within limitations of the sound use of credit to contribute to the stability of international finance and growth of world trade.
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> In the natural course of development it is to be expected that the bank will, in time, become an organization, not simply, or even predominantly, concerned with the handling of reparations, but also with furnishing to the world of international commerce and finance important facilities hitherto lacking. Especially it is to be hoped that it will become an increasingly close and valuable link in the coöperation of central banking institutions generally — a coöperation essential to the continuing stability of the world's credit structure.

The general objects of the Bank are stated at some length in the body of the Plan (Part 6) as well as in the article by Mr. Lamont above referred to, while the details of the management and operation of the Bank are set out in great detail in Annex I of the Plan. The following summary may be of assistance.

Structure of the Bank. In their discussions of the organization of the proposed institution the Experts clearly recognized that it was difficult, if not impossible, for them at this time to visualize precisely its future activities. The only sensible thing appeared to be to follow that excellent rule of business organization of selecting competent management and giving it large powers. The directorate of the new institution is even to have the power to amend its own statutes. This was

in fact necessary, for an international body could not be under the control of the legislature of any single country, nor is there any international body which could properly be given the authority to change its statutes.

The prime essential, then, was to make provision for competent management, and there must be assurance not only of competence but of a non-political and public-minded point of view. The directors of the Bank could not wisely be appointed by governments because of the danger of political or nationalistic points of view, and similarly it would be equally dangerous to have the directors appointed by private interests whose major concern might be for profit-making. It is imperative that an institution of this sort, which would be carrying on transactions in all the important money markets of the world, should be governed by the public interest rather than the urge for profit-making. These considerations suggested immediately that the appropriate agencies for appointing the directors of the International Bank were the central banks of issue of different countries. For these banks are reasonably free from governmental influence and devoted to the public service rather than to profit-making.

Thus it is provided that seven of the directors shall be the Governors of the central banks of the seven countries represented at the conference, namely, France, Germany, England, Belgium, Italy, Japan, and the United States, or the nominees of these governors, as it is obvious that it might be difficult for all the governors themselves to attend meetings.[3] Seven more directors

3. In any country where the Central Bank cannot or does not act, the following provisions are applicable:

"If in the process of organizing the bank or in the performance of its functions after establishment it is found that the Central Bank of any country or its governor is unable to act officially or unofficially in any

will be appointed, one by each of the Governors of these Central Banks. Further, during the payment of the German annuities the Governors of the Bank of France and of the Reichsbank may each appoint one additional director if they so desire. This original group of directors (either 14 or 16 in number) may be increased, if the central banks of other countries participate in the scheme, by the addition of not more than nine directors to be elected by the original group from lists furnished by the Governors of the Central Banks of countries desiring to participate. Thus a board of possibly twenty-three or twenty-five directors is provided for, in whom the entire authority for the management of the Bank is vested. The directors will appoint the active officers and make all important decisions, including the power to amend the statutes of the Bank.

These directors are to be elected for five-year terms, provision being made for serial expiration of the

or all of the capacities provided for in this outline, or refrains from so acting, alternative arrangements not inconsistent with the laws of that country shall be made.

"In particular the governors of the Central Banks of the countries whose nationals are members of the present committee or as many of them as are qualified to act, may invite to become members of the Board of Directors of the bank two nationals of any country, the central bank of which is eligible under this outline to take part in forming the board of the bank but does not do so. The two nationals of that country, upon acceptance of the invitation, shall be qualified to act in the full capacity of directors of the bank as provided in this outline.

"Further, the directors of the Bank shall be authorized to appoint in lieu of any central bank not exercising any or all of the functions, authorities or privileges which this outline provides that central banks may or shall exercise, any bank or banking house of widely recognized standing and of the same nationality. Such bank or banking house upon appointment and acceptance shall be entitled to act in the place of the central bank in any or all capacities appropriate to central banks under this outline, provided only that such action is not inconsistent with the laws of the country in question."

As the United States Government has publicly announced that it will not "permit" the Federal Reserve System to participate in the Bank, it is obvious that if any American participation is to take place it must be unofficially under the above provisions.

original terms. They may be reappointed. Directors chosen after the expiration of the terms of the original board are chosen in the same manner.

An organization committee is provided to draw up the statutes of the bank and put it into operation. This committee is to be appointed by the Governors of the central banks of the seven countries represented at the conference. Each governor is to appoint two members. In case any governor fails to appoint representatives, the other governors may select two of his nationals as members of the organization committee. No site for the Bank is named in the Plan. Presumably it will be selected by the governments at their forthcoming conference on measures to make the Plan effective, or, in default of such action, possibly by the organization committee.

Stock of the Bank. The original capital of the bank will be $100,000,000 of which $25,000,000 will be paid in, or "called up" as it is described abroad, the shares carrying a liability for the uncalled portion. Shares are to be issued in equal amounts in the seven countries represented on the Experts' Committee, through the central banks in these countries, or through agencies approved by them. Other countries may be added if they desire, but at least 55 per cent of the shares issued must be issued in the seven original countries. The shares will carry no voting rights. Such rights are to be exercised exclusively by the banks of issue in the different countries, except as provided above. It is quite difficult to see exactly what questions may require any action by the stockholders, since they do not choose the directors and the latter have power to amend the statutes.

The Bank is to pay dividends on its capital stock limited to a maximum of 12 per cent, in accordance with

a schedule which provides also for adequate transfers to reserves. Of the profits remaining after the payment of dividends and the transfer to reserves 75 per cent is to be distributed to the governments or central banks of creditor countries or of Germany, which maintain long term time deposits with the bank. The other 25 per cent is reserved to assist the German Government in paying the last twenty-two years' annuities, provided Germany makes a long term deposit in the Bank amounting to 400,000,000 reichsmarks, and the proportion so reserved will be varied in accordance with the size of the deposit Germany makes.

Powers of the Bank. The Bank has broad powers to receive deposits, to make loans and investments, and to carry on other operations similar to those of banks of issue, but of course has no power to issue currency. Provision is made, however, that the Bank must carry reserves somewhat similar to those carried by a bank of issue. Against clearing accounts of banks of issue for purposes of settling international balances, which would in effect be a world gold settlement fund, the whole amount of the deposit must be held in gold. Against deposits payable in fifteen days or less a minimum reserve of 40 per cent must be held in gold or in foreign exchange on gold standard or gold exchange standard countries, and against deposits of maturity longer than fifteen days a similar reserve of 25 per cent is required.

Size of the Bank. The first question that has been asked about the International Bank all over the world has concerned its size and scope. It has been widely advertised as a super-bank in perhaps much the same way as the Agent General for Reparation Payments was dubbed king of the world immediately after the completion of the Dawes Plan. The only answer that can now be made to this question is that it is quite impossi-

ble to tell how important or of what scope the operations of the International Bank are likely to be. Certain of its operations, which are referred to in the Plan as primary or obligatory functions, in connection with the receipt, management, and distribution of the annuities, are predictable, for these are banking operations not unlike those commonly conducted by many banks. They do not involve any considerable breadth of scope or any large personnel, altho they are important, and, if wisely managed, can exert a stabilizing influence, not only in Germany, but on other, and especially European, markets. These functions are described more fully in the Plan and in the article by Mr. Lamont referred to above.

As to the auxiliary or permissive powers, which relate to the functions of the Bank in coöperation with banks of issue in dealing with problems of international finance, it is now impossible to venture any predictions. The Bank has indeed few statutory limitations on the extent of its operations in this direction. The limitations are rather of a practical character. The first limitation arises from the size of its capital and available funds. The paid-in capital is relatively small — $25,000,000. In addition the Bank will have for employment amounts somewhat indeterminate but aggregating perhaps a few hundred millions of dollars, or considerably less than the sums at the command of any large commercial bank in a principal money center. This amount is, of course, subject to increase to the extent that the Bank is utilized as a depositary by banks of issue, governments, or commercial banks. The extent of this business is now impossible to predict.

A further natural limitation upon the scope of the Bank's operations is to be found in the character of its directorate and its general purposes. Some fear has

been expressed that the Bank might offer undesirable competition with other banks. Safeguards against this danger are to be found, first, in the repeated emphasis in the Plan that the development of the Bank should be non-competitive, "without encroaching upon the activities of existing institutions." The Plan furthermore provides that the International Bank may not undertake any operations in any money market without the consent of the bank of issue of that country. Furthermore, the directorate of the International Bank is to be composed of individuals appointed by the governors of the banks of issue of the different countries, who will presumably be in close touch with money market conditions in each country and would oppose any policy which took the form of undue interference with established institutions. Under all these circumstances it seems clear that the Bank from its very nature will not be the financial octopus which a few have feared, but will fill quite a different rôle. Its operations will much more nearly resemble the operations of banks of issue.

Conclusions. The Bank is a double-barreled organization with two separate functions. One, primary and compulsory, is the receipt and distribution of the German annuities, from which many advantages may be expected. Not the least of these is the removal of the reparations question from the political field and its administration by a non-political body, international in character, and composed of men of experience and judgment. This should result in the impartial and efficient handling of payments by Germany to her creditors, including the problems of commercialization, of investment of reichsmarks in case of a postponement of transfer, and the other auxiliary functions which accompany these major operations. Through the services of the Bank it should be possible to perform these opera-

tions without removing from Germany any of its responsibility for payments; and in case difficulties should arise in the execution of the Plan, through circumstances which cannot now be foreseen, the Bank will convoke the Advisory Committee provided for in the Plan (Part 8e) for the purpose of advising on the whole situation, the report of which will be submitted to the Bank and to the different governments interested for any action these governments may see fit to take. The presence of the Bank adds elements of elasticity to the whole plan of payments. It is possible that in times of stress the Reichsbank, and other central banks as well, might be enabled to obtain short-term credits which would greatly facilitate the fulfillment of Germany's obligations.

The other important benefit to be expected from the establishment of the Bank lies in its furnishing a regular meeting place for the representatives of banks of issue, where common problems of world finance may be discussed in a broad-minded manner, and where possible remedies may be found for difficulties that arise. The Bank should vastly increase the prospects for international coöperation in the field of finance. Often in the past international jealousies have operated to prevent any one country from taking the lead in a critical situation. With many countries represented on the Board of the Bank, it is not unreasonable to hope that such situations may be avoided in the future.

It is impossible to predict today what may be expected from the secondary or auxiliary functions of the Bank. The Experts decided wisely that this must be a matter of slow growth, dependent on the wisdom of the managers and their ability to coöperate in an international organization. It is quite clear that the Bank is not an octopus, for its resources at the commencement of its operations will not permit it to "run the

world." It is intended to supplement existing organizations and not to compete with or supplant them. Undoubtedly it has great possibilities for the future in exercising a steadying and stabilizing influence on international financial relations, without attempting in any way to control them or interfere with the established policy of any one country. It may have some such effect as the establishment of the Federal Reserve Banks has had on the monetary system of the United States; for the permissive functions may in the end result in the new Bank having a relation to central banks of issue, especially in Europe, somewhat like the relation of our Federal Reserve Banks to their member banks, which, it must be generally admitted, has contributed greatly to the stability of our domestic financial structure.

Only time can tell what results will be produced, and they will depend to a great extent on the wisdom and judgment of the directors. The United States Government has announced that it will have nothing to do officially with the Bank, altho apparently it does not object to having individuals associated in no way with the Government or the Federal Reserve System participate at their own risk in the enterprise. It is greatly to be hoped that private individuals can be found in this country who will undertake the risks involved in this new attempt at international coöperation.

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NOTE

THE DURATION OF BUSINESS CYCLES

FROM Dr. Thorp's collection of Business Annals covering seventeen countries for varying periods, Professor Mitchell secures one hundred and sixty-six observations on the duration of business cycles. Professor Mitchell notes that the frequency distribution of cycle durations is skewed toward the higher values and that the series admits of satisfactory description by a logarithmic curve of error. He then proceeds to interpret the distribution in these terms:

> We infer that, like other biological and social phenomena whose distributions are well described by some form of the normal curve, the durations of business cycles may be regarded as the net resultants of a multitude of factors which are largely independent of each other. If there is any dominant factor or set of factors, which tends to produce cycles of uniform duration, its influence is greatly modified by a host of other factors combined in ways which vary endlessly.[1]

Yet the logic of the probability calculus on which Professor Mitchell bottoms this inference would lead to such an interpretation for the logarithms of the observed cycle periods rather than for the cycle durations as such. A formal application of the theory of frequency curve types would rather suggest for the given distribution that either some one factor or group of factors is of preponderant importance, or that a certain degree of interdependence exists, or that both sets of circumstances obtain. A skewed distribution in the case of a homogeneous population can have this meaning only.[2]

1. W. C. Mitchell, Business Cycles — The Problem and Its Setting, pp. 419–420.

2. By working empirically with successive roots of the x values in a skewed frequency series, an approximation to the normal curve could be attained. The graph of the nth root of the cycle durations may be taken to approach a normal curve. If then an inference as to *actual*

By fixing attention on the symmetrical character of the distribution of the *logarithms* of the cycle durations, Professor Mitchell failed to examine the systematic factors that produced the skewed distribution of the *actual* cycle durations. Having stated that the number of factors impinging on the cycle period is large, that these factors are largely independent of each other, and that dominant factors, if existent, failed to impress themselves on the pattern of cycle durations, Professor Mitchell concluded at this point his attempt to explain the duration of business cycles. And indeed, if the etiological factors of a given situation are numerous, largely independent, and roughly equi-potent, the theorist's task is exhausted when he records these facts. It would obviously not be feasible, in such a case, to list the factors or to trace their consequences.

The problem of the duration of business cycles has not received very much attention from business cycle theorists. It has been attacked, in the main, by writers who have sought an explanation (especially in terms of physical cause) of a periodic cycle. In such cases, an explanation of the business cycle is at the same time an explanation of the period of the cycle. Notable excursions in this field have been made by W. S. Jevons, H. S. Jevons, and H. L. Moore. Among theorists who have sought to explain a non-periodic cycle, and who have paid some attention to the problem of explaining the duration of the cycle, Veblen, Cassel, and Pigou may be mentioned.[3] But inquiries in this field have not been carried very far. That is due first, to the preoccupation of theorists

cycle durations such as that drawn by Mitchell from the logarithms of the cycle periods may be made with validity, it would seem that the inference might be drawn equally well from their nth roots. But the theory of the curve of error would limit an inference as to multiplicity of factors, their independence, and absence of dominant elements to the nth roots of the durations. And it is the variable in its original form rather than the logarithms, nth roots, or any other transformation thereof that si to be explained.

3. Cf. W. S. Jevons, Investigations in Currency and Finance, chaps. 6–8; H. S. Jevons, The Sun's Heat and Trading Activity; H. L. Moore, Economic Cycles: Their Law and Cause, and Generating Economic Cycles; G. Cassel, The Theory of Social Economy (McCabe's translation), p. 619; T. Veblen, Theory of Business Enterprise, pp. 245–250; A. C. Pigou, Industrial Fluctuations, part I, chap. 22.

with the problem of explaining the sequence of phases of business fluctuations, and second, to the paucity, and in many cases the questionable exactitude, of the observations with which earlier writers had to work.

A reader of Professor Mitchell's Introduction to Business Annals or of the slightly altered presentation in chapter 4 of Business Cycles had good reason to hope that a far-reaching explanation of the duration of business cycles would be attempted. Professor Mitchell worked with an incomparable collection of material.[4] He made many illuminating observations on the distribution of cycle durations in his rather remarkable analysis of Business Annals. An amalgamation of several of his observations would have sufficed to throw considerable light on the asymmetry of the distribution. Yet, in his résumé, Professor Mitchell ignored the many penetrating comments that he had made on the form of the distribution, and presented as a final interpretation of the series the statement that is quoted at the beginning of this paper. It may be pertinent, therefore, to adduce a number of the observations recorded by Professor Mitchell, along with some additional comments, in an attempt at a partial explanation of the frequency distribution of cycle periods that Professor Mitchell has given us.

1. The asymmetry of the distribution is due in part to the interdependence among some of the observations.[5] The following points may be cited in substantiation of this position:

(*a*) Professor Mitchell constructed frequency tables of the combined cycle durations of the United States, England, France, Germany, and Austria for the periods before and after 1873. He maintains that "from 1873 to the end of the late war, the business fortunes of these countries, particularly of the European countries, ran more similar courses than in

4. See, however, the animadversions by O. Ingraham in the American Economic Review, December, 1928, p. 750.

5. On the growing interdependence of business cycles in different countries, see Mitchell, op. cit., chap. 4, section 5; Pigou, op. cit., pp. 14–15; A. Marshall, Money, Credit and Commerce, pp. 247–248. See also A. Aftalion, Les Crises Périodiques de Surproduction, i, 19–24, and H. Jerome, Migration and Business Cycles, chap. 8

earlier years. That is, the observations in the later period are less independent of each other than the earlier observations — a fact which may explain the lesser regularity of Figure E [after 1873] as compared with Figure D [before 1873]." [6]

(*b*) Professor Mitchell made a distribution of "the cycles in the four countries . . . which seem to have the closest business ties with each other for the period" for which annals for the four were available, and concluded that "the results . . . constitute one of the least regular distributions." On the other hand, a distribution made up of a "random group of similar size from observations which must be nearly independent of each other" yielded a "much more regular distribution." [7]

(*c*) It is also to be noted that Professor Mitchell's distribution for seven industrial countries is much less regular than that for ten non-industrial countries,[8] a fact probably due to the closer economic relationship among the former countries than among the latter.

2. The asymmetry of the distribution may be due further to the amalgamation, in a single series, of observations on the duration of business cycles obtained from countries of relatively different types of economic organization.[9]

We may expect, prima facie, fairly symmetrical distributions of cycle durations for distinct stages of economic development (whatever asymmetry there may be being due to the partial interdependence of the observations). We should expect further that a combination of these fairly symmetrical distributions into a single series would result in an asymmetrical distribution, since the average cycle period will be likely to vary,[1] and under such conditions a symmetrical

6. Mitchell, op. cit., p. 401.
7. Idem.
8. Ibid., pp. 400, 405.
9. Cf. O. Morgenstern, International Vergleichende Konjunkturforschung, Zeitschrift für die Gesamte Staatswissenschaft, September, 1927, pp. 269, 274–275, 284; F. Mills, "An Hypothesis Concerning the Duration of Business Cycles," Journal of the American Statistical Association (December, 1926), pp. 447–448.
1. Cf. F. Mills' study, op. cit.

aggregate distribution, tho possible, is not likely to occur.

If an acceptable classification of economic cultures were available, we would have the materials requisite for a verification of this hypothesis. A division of the economic history of the countries covered in Dr. Thorp's Business Annals has been made by Professor Mills,[2] and tho Professor Mills' historical schema leaves something to be desired,[3] it is here used, for all that it may be worth, to check the present hypothesis.

Frequency distributions of the cycle durations were constructed for each of Professor Mills' stages, and the degree of asymmetry in these distributions, as well as in the composite distribution, was roughly ascertained by using the formula: Coefficient of skewness $= \frac{3\ (\text{Mean-Median})}{\text{Standard Deviation}}$. The coefficient found for the whole distribution is .39, for the "early stages of industrialization" is zero, for the "period of economic transition" .57, and for the "stage of economic stability" .04. Thus the distributions of the cycle durations in the first and third periods are substantially regular; the distribution for the second stage, however, is even more asymmetrical than the aggregate distribution. The hypothesis is borne out, therefore, only in part.

3. The duration of business cycles may be connected with secular changes in general prices,[4] the business cycles occur-

2. Ibid., p. 454.

3. See criticism by Mitchell, op. cit., pp. 412–416.

4. Cf. C. Snyder, Business Cycles and Business Measurements, p. 204. The relation discussed below between the secular trend of prices and the duration of business cycles does not hold to the same extent prior to 1873. But it must be remembered that a relationship of the sort presupposed can only exist in an economy whose several constituents are so closely welded together that a disturbance in one part will be readily transmitted to all others; and it is doubtful if the "business economy" had developed to that point before 1873. Cassel, who has confined his theory of conjunctures to the period after 1870, justifies his procedure in these terms: "The crises that fall within the period considered here have to some extent a common character, and they are in the main an outcome of the causes which are responsible for the ordinary and increasingly interconnected fluctuations of the economic life; whereas the more casual conditions which generally governed the earlier crises disappear more and more. The close observer of the economic history of the nineteenth century cannot fail to see a gradual change in the char-

ring during periods of rising prices being shorter in duration, on the average, than cycles in periods of declining prices. This relation may be explained in part by two of Professor Mitchell's findings: first, that in periods of rising prices, the ratio of years of prosperity per year of depression is conspicuously higher than during periods of falling prices,[5] and second, that "the depressed phases of business cycles are susceptible of greater prolongation than the prosperous phases."[6] The following empirical evidence corroborates the stated hypothesis.

(*a*) The two longest American cycles (1815–1822, 1873–1882) took place when the secular trend of general prices was downward, as did the three longest British cycles (1837–1847, 1873–1883, 1890–1900).

(*b*) From 1873 to 1900, a period of falling world prices,[7] the average duration of cycles in England, France, Germany, Austria, and the United States was six and one-third years. For the period from 1900 to 1920 (Germany and Austria to

acter of the phenomenon we call a crisis. This change, however, did not go so far as to bring out clearly the new type of crisis and conjuncture-movement until the seventies. On this ground there are certain objections to theories of modern conjuncture-movements which built (sic) too much upon material from the history of the earlier crises, and we are fully justified in confining our inquiries to the period after 1870." — The Theory of Social Economy, pp. 506–507. Carl Snyder, at the end of an examination into the statistical material available for our early business history, concluded that "the panic of '37 was merely a passing financial flurry"; that the crisis of 1857 "was essentially a financial and banking convulsion and not the beginning of a serious industrial depression"; and that "the advent of the unmistakable business 'cycle' in the sense that it has been so extensively used in our own day, appears to date from about the late sixties." — Business Cycles and Business Measurements, pp. 14, 15, 17. It should be pointed out, however, that Snyder's findings have been rendered questionable by the researches of Arthur H. Cole. See especially his "Statistical Background of the Crisis Period, 1837–42," in the Review of Economic Statistics, November, 1928.

5. Mitchell, op. cit., pp. 410–411. Cf. Aftalion, op. cit., p. 14; K. Helfferich, Money (Infield's translation), ii, 564; and R. G. Hawtrey, Trade and Credit, p. 78.

6. Mitchell, op. cit., p. 421. Cf. pp. 411, 412.

7. Tho the trough of general prices in these countries was reached about 1896, the occurrence of an international crisis in 1900 led to the use of that year as a turning point. This expedient, however, does not impair the analysis.

1922), a period of secular price rise, the average duration of business cycles was four and one-half years.[8] The lower average for the second period holds for the several countries individually, as well as in combination, as the appended figures show.

AVERAGE DURATION OF BUSINESS CYCLES IN YEARS [9]

	1873 to 1900	1900 to 1920
England	9	5
France	7	4¼
Germany	5¾	4⅔
Austria	6¾	5¾
United States	4¼	3½

4. The "period of gestation," i.e. the period required for the construction of instrumental equipment, may leave its impress on the pattern of cycle durations. This involves the assumption that fluctuations in the output of capital goods is the process of critical importance in business cycles.[1] The decline in the average duration of the cycle period in the second quarter of the last half century may be accounted for not only by the upward price trend but as well by the reduction in the average "period of gestation" that has been consequent upon our advancing technology.[2]

5. In addition to the factors listed as putative determinants of cycle periods, there is a host of accidental and sporadic factors that impinge upon the duration of business cycles.[3]

8. Cf. C. O. Hardy and G. V. Cox, Forecasting Business Conditions, p. 13.

9. The figures are derived from tables in Mitchell, op. cit., pp. 387, 390–392.

1. Perhaps the best statement of this type of theory is found in D. H. Robertson, A Study of Industrial Fluctuations, chap. 1, section 1. See also C. Snyder, "The Problem of Prosperity," Journal of the American Statistical Association (March, 1929), pp. 6–7, and A. H. Hansen, Business Cycle Theory, chap. 4.

2. Cf. Cassel, op. cit., p. 619.

3. Pigou, in a somewhat elaborate analysis, argues "that some part in determining the recorded rhythm of industry may well be played" by the length of life of instrumental equipment, the "period of gestation," changes in credit creations, and harvest variations; "sometimes supporting, sometimes partly cancelling one another, they, in association, no doubt, with a number of sporadic accidents of greater or less importance, jointly determine the duration of successive industrial cycles." — Industrial Fluctuations, p. 212.

And all that can be said with respect to *these* factors is that they are numerous and roughly equi-potent.

To summarize. A statement of the systematic factors which may account for the asymmetry in the *given* frequency distribution of the duration of business cycles is presented in points 1 and 2. The several factors listed explain in part the range of variation of the *given* distribution; while point 4 contains a suggestion as to the central tendency of cycle periods. Of course, the factor mentioned under point 3 may be one of the elements that tend to produce asymmetry in the *given* distribution. This is also true of the elaborated version of the factor discussed under point 4. The latter may be regarded, besides, as an instance of the problem discussed under point 2.

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INTRODUCTION TO A STUDY OF ECONOMIC AND ETHICAL THEORY

BY JACQUES RUEFF

ANCIEN ÉLÈVE DE L'ÉCOLE POLYTECHNIQUE

TRANSLATED BY HERMAN GREEN

WITH AN INTRODUCTION BY

HERMAN OLIPHANT AND ABRAM HEWITT

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xxxii + 159 pp. 12mo. Cloth, $2.00 (1929)

This book deals with the general problem of adapting the scientific methods of the physical sciences to use in the development of the social sciences. It has been translated because it constitutes a substantial and permanent addition to the little that we know about this problem. How more exact or objective methods of investigation are to be found and employed in the field of the social sciences is a current question of growing importance. Indeed, the next great advance in human thought may be along just this line. The wealth of current literature on the perils in the fact that the development of our mechanical techniques is outrunning the improvement of our social institutions for dealing with the problems, which the machine age is throwing up, indicates the need for an advance in human thought along just this line.

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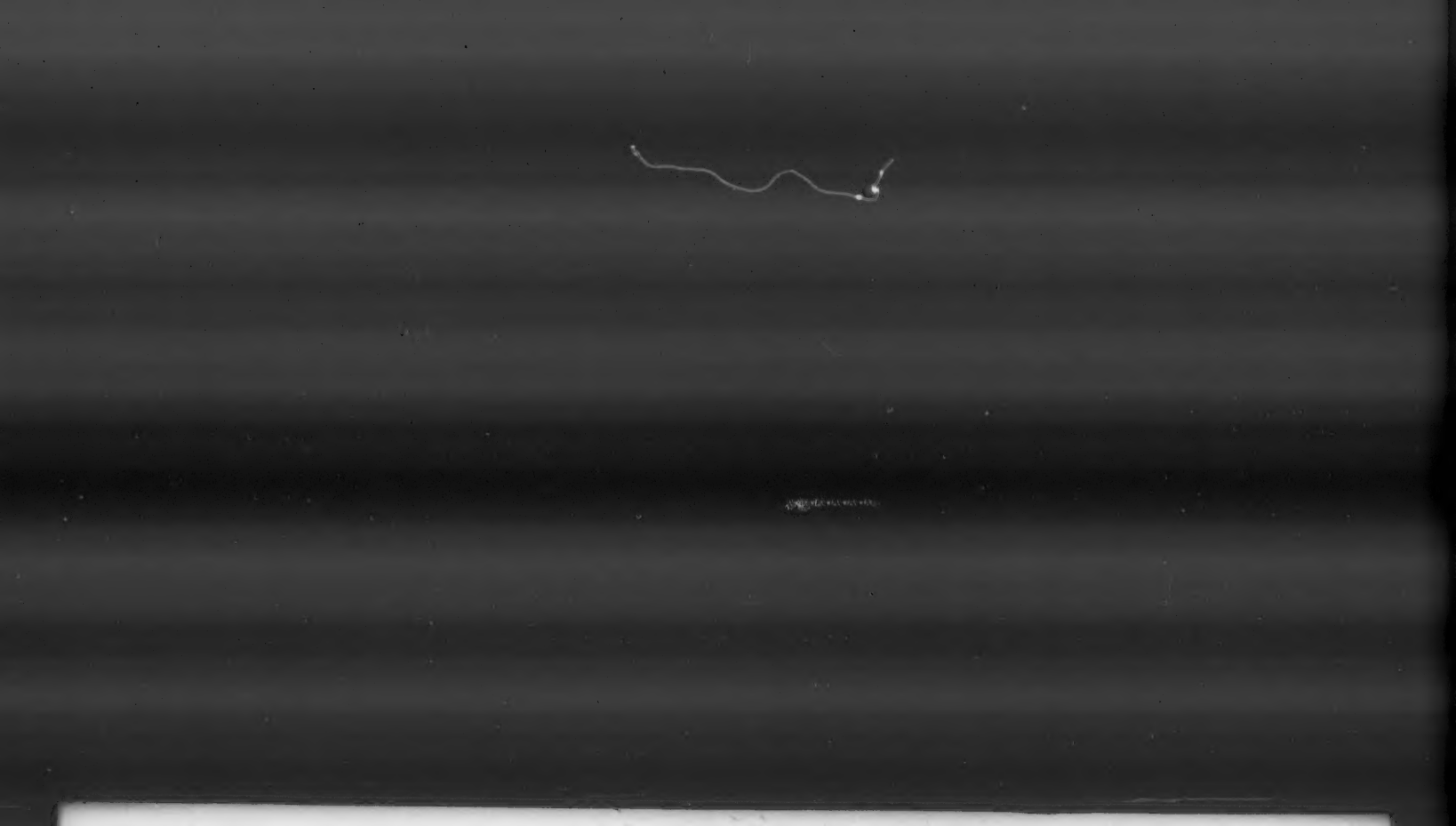

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